

SONY®

DIGITAL GRAPHIC PRINTER

UP-D897

SERVICE MANUAL

1st Edition

⚠ 警告

このマニュアルは、サービス専用です。

お客様が、このマニュアルに記載された設置や保守、点検、修理などを行うと感電や火災、人身事故につながる可能性があります。

危険をさけるため、サービストレーニングを受けた技術者のみご使用ください。

⚠ WARNING

This manual is intended for qualified service personnel only.

To reduce the risk of electric shock, fire or injury, do not perform any servicing other than that contained in the operating instructions unless you are qualified to do so. Refer all servicing to qualified service personnel.

⚠ WARNUNG

Die Anleitung ist nur für qualifiziertes Fachpersonal bestimmt.

Alle Wartungsarbeiten dürfen nur von qualifiziertem Fachpersonal ausgeführt werden. Um die Gefahr eines elektrischen Schlages, Feuergefahr und Verletzungen zu vermeiden, sind bei Wartungsarbeiten strikt die Angaben in der Anleitung zu befolgen. Andere als die angegebenen Wartungsarbeiten dürfen nur von Personen ausgeführt werden, die eine spezielle Befähigung dazu besitzen.

⚠ AVERTISSEMENT

Ce manuel est destiné uniquement aux personnes compétentes en charge de l'entretien. Afin de réduire les risques de décharge électrique, d'incendie ou de blessure n'effectuer que les réparations indiquées dans le mode d'emploi à moins d'être qualifié pour en effectuer d'autres. Pour toute réparation faire appel à une personne compétente uniquement.

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Manual Structure

Purpose of this manual

This manual is the service manual of Digital Graphic Printer UP-D897.

This manual describes the information on maintenance and the service information such as service overview, electrical alignment, circuit description, troubleshooting, and service mode (self-diagnosis function).

Related manuals

In addition to this "Service Manual", this unit is provided with the manual below.

- **"Operating Instruction" PDF (Included in the CD-ROM Supplied for products.)**

Part No.: 3-863-306-0X

These manuals describes the information required for the actual management and operation of this unit.

- **"Semiconductor Pin Assignments" CD-ROM (Available on request)**

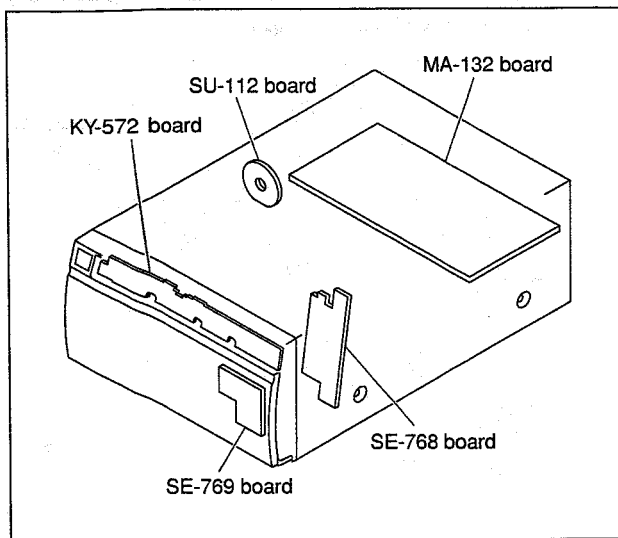
This "Semiconductor Pin Assignments" CD-ROM allows you to search for semiconductors used in B&P Company equipment.

Part number: 9-968-546-XX

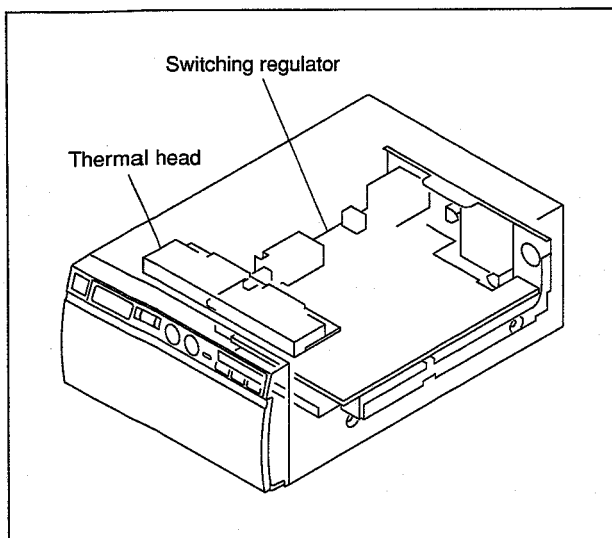
Section 1

Service Overview

1-1. Board Location



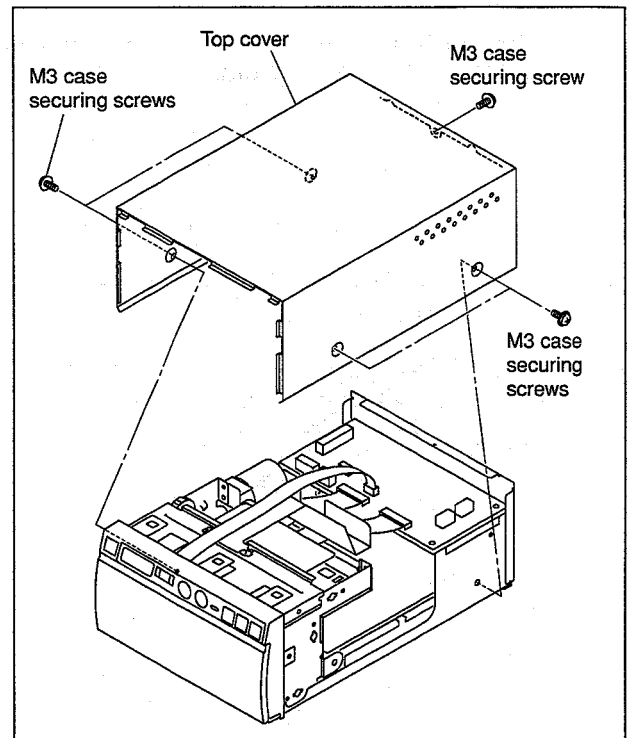
1-2. Main Parts Location



1-3. Removing/Installing the Cabinet

1-3-1. Top Cover

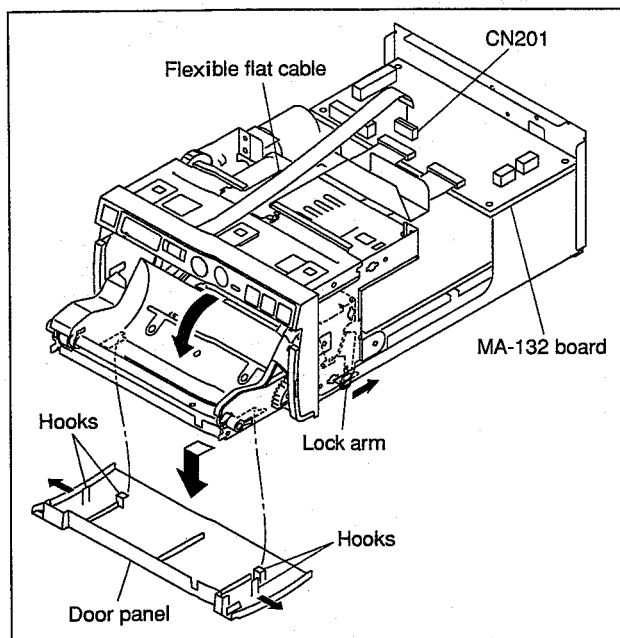
1. Remove the five M3 case securing screws, then remove the top cover.



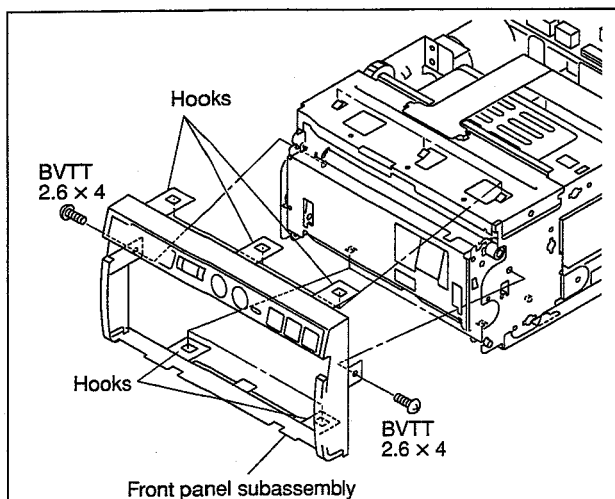
2. Attach the top cover in the reverse order.

1-3-2. Front Panel Subassembly

1. Remove the top cover. (Refer to Section 1-3-1.)
2. Release the lock arm of the mechanical deck block (bottom surface) in the direction of the arrow, then open the door panel.
3. Remove the four hooks in both directions of the arrows, then remove the door panel in the direction of the arrow.
4. Disconnect the flexible flat cable from the connector (CN201) on the MA-132 board.



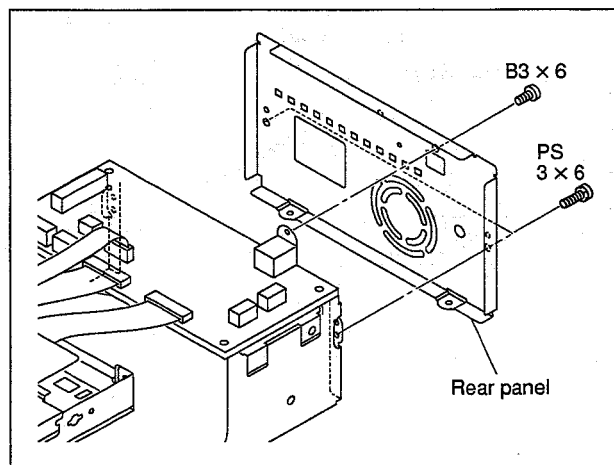
5. Remove the two screws and five hooks, then remove the front panel subassembly.



6. Attach the front panel subassembly in the reverse order of steps 1 to 5.

1-3-3. Rear Panel

1. Remove the top cover. (Refer to Section 1-3-1.)
2. Remove the two screws (PS3 x 6) and the screw (B3 x 6), then remove the rear panel.



3. Attach the rear panel in the reverse order of steps 1 and 2.

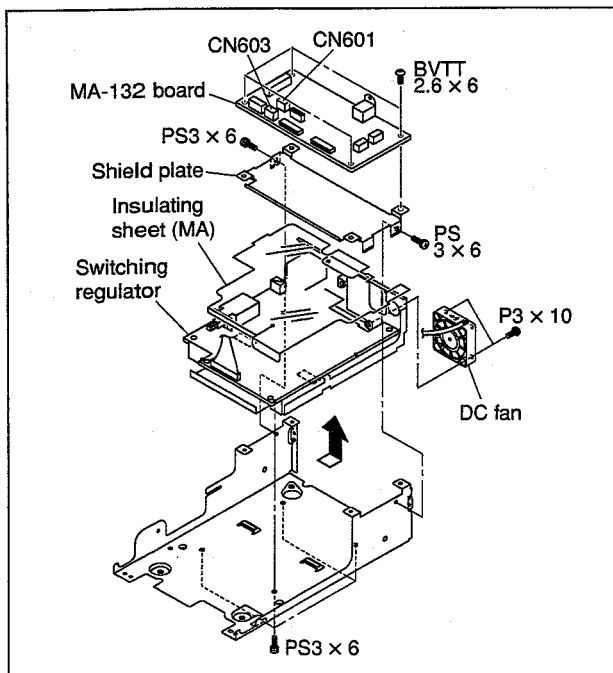
1-4. Replacing the Main Parts

1-4-1. Switching Regulator/DC Fan

Note

There are two types of DC fan mounting connectors. Connect the harness of the DC fan for power supply to the connector (CN601). The connector (CN603) is provided for mounting the optional DC fan for cooling the thermal head.

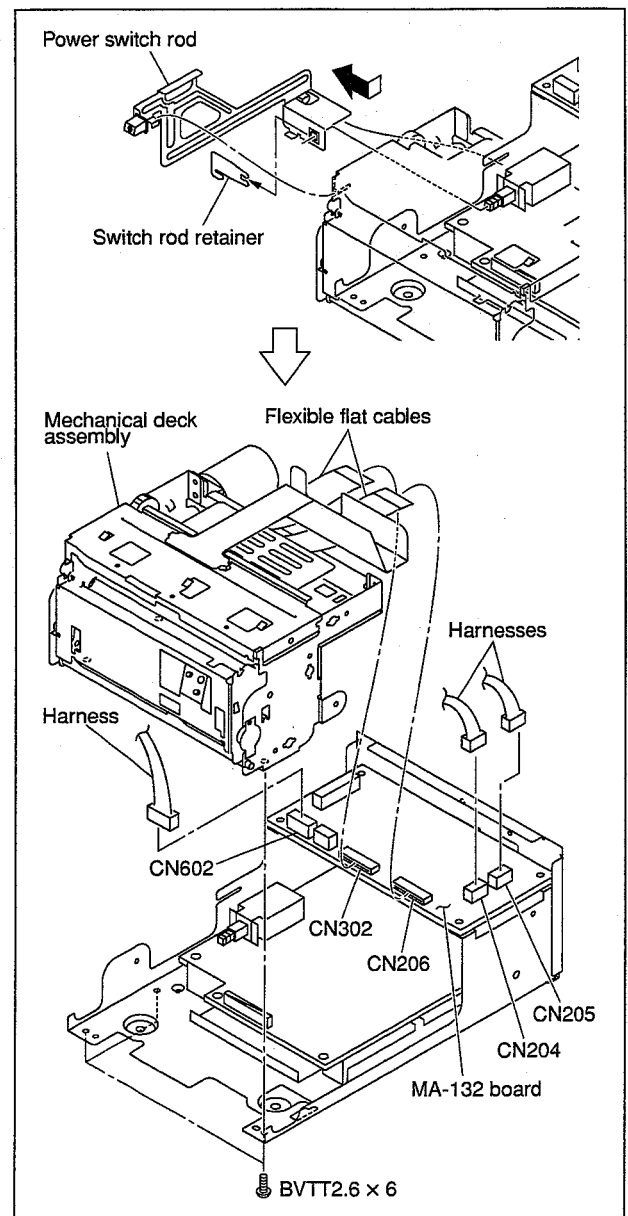
1. Remove the top cover. (Refer to Section 1-3-1.)
2. Remove the front panel subassembly. (Refer to Section 1-3-2.)
3. Remove the rear panel assembly. (Refer to Section 1-3-3.)
4. Remove the mechanical deck assembly. (Refer to Section 1-4-2.)
5. Disconnect all harnesses and flexible flat cables from the MA-132 board.
6. Remove the four screws (BVT2.6 × 6), then remove the MA-132 board.
7. Remove the two screws (PS3 × 6), then remove the shield plate and insulating sheet (MA).
8. Remove the two screws (P3 × 10), then remove the DC fan.
9. Remove the four screws (PS3 × 6), then remove the switching regulator.



10. Attach the switching regulator in the reverse order of steps 1 to 9.

1-4-2. Mechanical Deck Assembly

1. Remove the top cover. (Refer to Section 1-3-1.)
2. Remove the front panel subassembly. (Refer to Section 1-3-2.)
3. Remove the switch rod retainer, then remove the power switch rod.
4. Disconnect the three harnesses from the connectors (CN204, CN205 and CN602) on the MA-132 board.
5. Disconnect the two flexible flat cables from the connectors (CN206 and CN302) on the MA-132 board.
6. Remove the three screws, then remove the mechanical deck assembly.



7. Attach the mechanical deck assembly in the reverse order of steps 1 to 6.

1-4-3. Thermal Head

Note

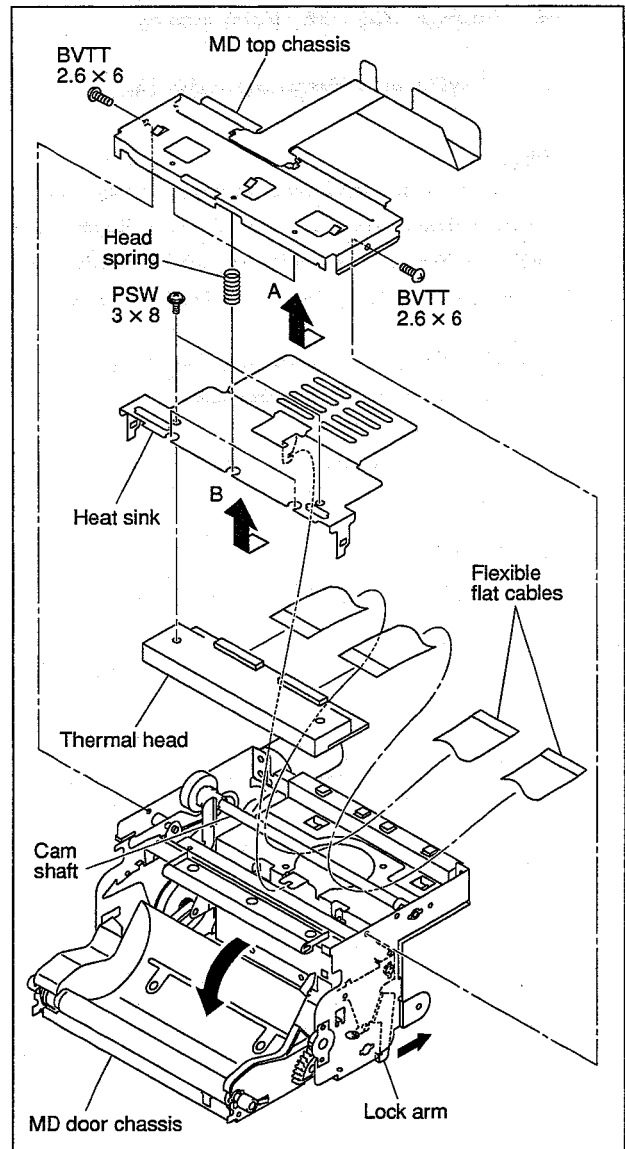
After replacing the thermal head, perform the head voltage adjustment. For the adjustment procedure, refer to Section 2-3.

1. Remove the top cover. (Refer to Section 1-3-1.)
2. Remove the front panel assembly. (Refer to Section 1-3-2.)
3. Remove the mechanical deck assembly. (Refer to Section 1-4-2.)
4. Remove the two screws (BVTT2.6 × 6), then remove the MD top chassis and three head springs.

Note

When removing the MD top chassis, be sure to remove it slowly in the direction of the arrow A to prevent the head springs from popping out.

5. Release the lock arm in the direction of the arrow, then open the MD door chassis.
6. Remove the heat sink in the direction of the arrow B.
7. Remove the two screws (PSW3 × 8), then remove the thermal head.
8. Disconnect the two flexible flat cables from the thermal head.



9. Attach the thermal head in the reverse order of steps 1 to 8.

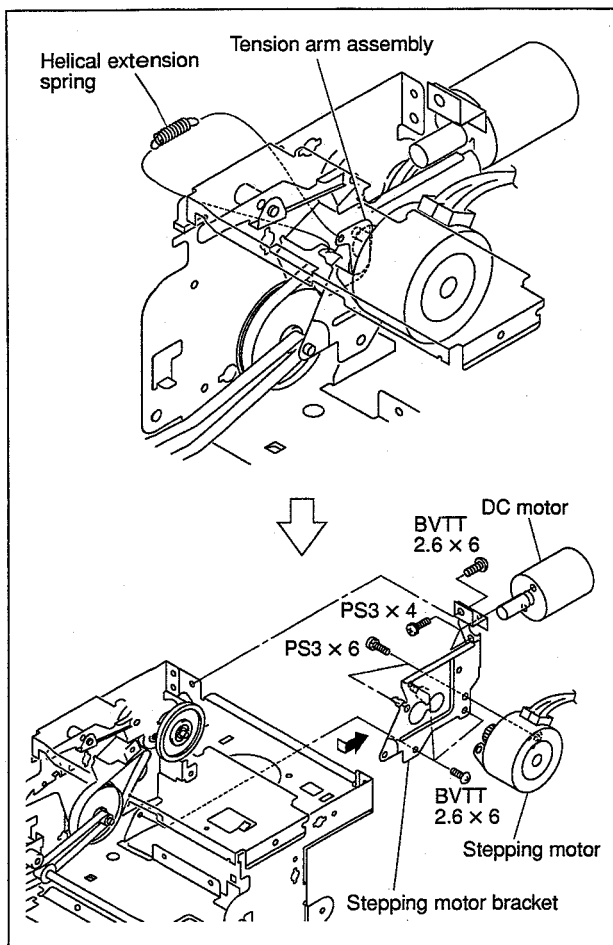
Note

When connecting the flexible flat cables, route them under the cam shaft.

1-4-4. Stepping Motor/DC Motor

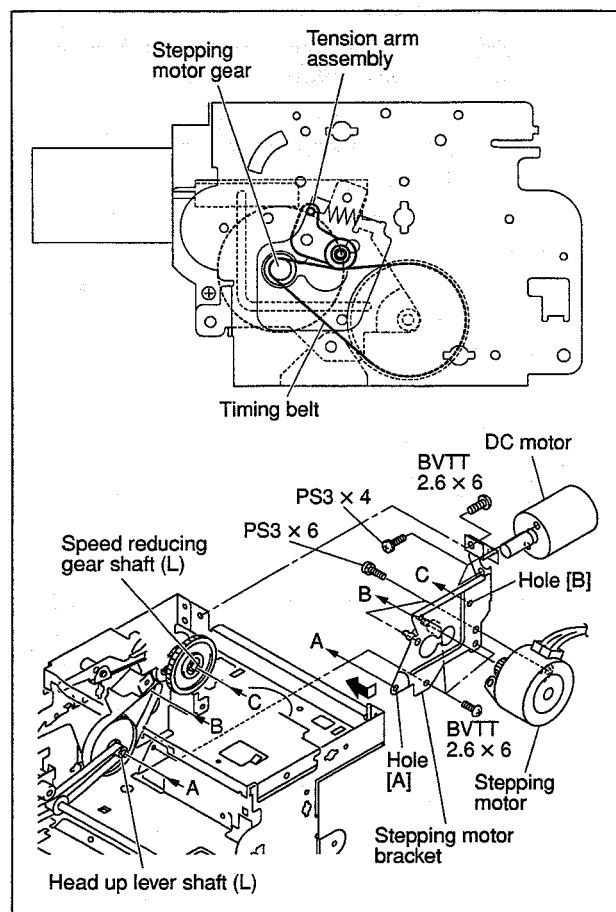
Removal

1. Remove the top cover. (Refer to Section 1-3-1.)
2. Remove the front panel assembly. (Refer to Section 1-3-2.)
3. Remove the mechanical deck assembly. (Refer to Section 1-4-2.)
4. Remove the helical extension spring from the tension arm assembly.
5. Remove the four screws (BVTT2.6 × 6), then remove the stepping motor bracket.
6. Remove the two screws (PS3 × 4), then remove the DC motor.
7. Remove the two screws (PS3 × 6), then remove the stepping motor.



Installation

8. Attach the DC motor with the two screws.
9. Insert the head up lever shaft (L) into the hole [A] and insert the speed reducing gear shaft (L) into the hole [B], then attach with the three screws.
10. Hang the timing belt on the stepping motor gear.

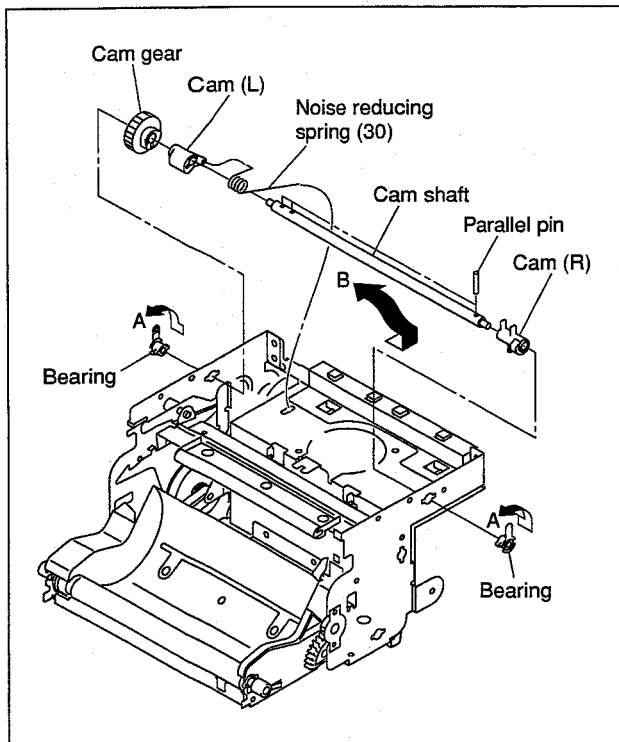


11. Assemble this unit in the reverse order of steps 1 to 4.

1-4-5. Cam Shaft Assembly

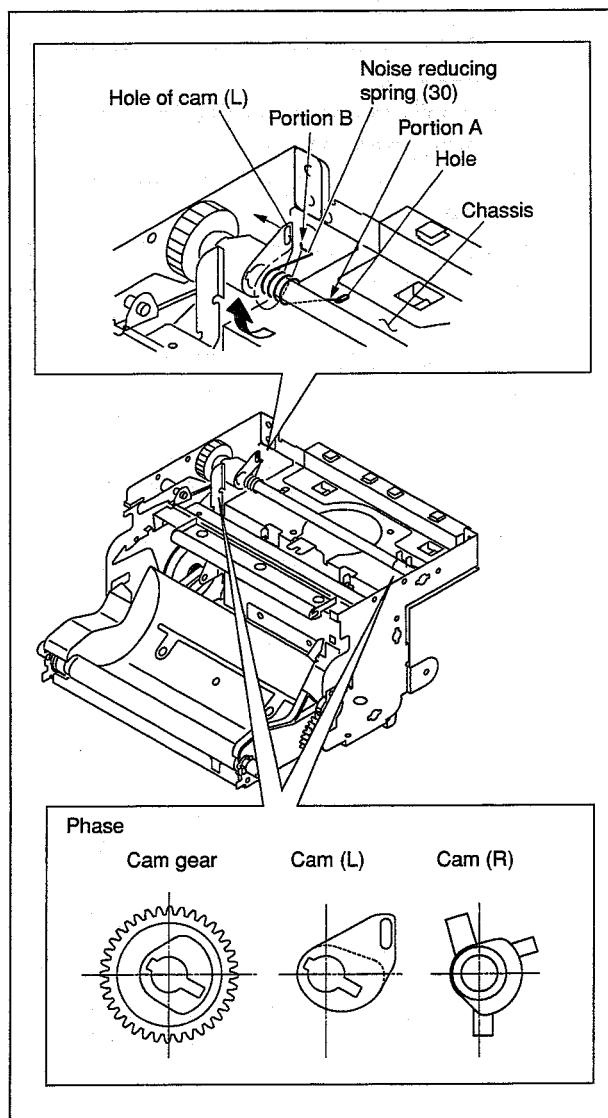
Removal

1. Remove the top cover. (Refer to Section 1-3-1.)
2. Remove the front panel assembly. (Refer to Section 1-3-2.)
3. Remove the mechanical deck assembly. (Refer to Section 1-4-2.)
4. Remove the thermal head. (Refer to Section 1-4-3.)
5. Remove the paper holder assembly. (Refer to step 4 of Section 1-4-7.)
6. Remove the two bearings by rotating them in the direction of the arrows A.
7. Remove the cam shaft assembly in the direction of the arrow B.
8. Remove the cam (R), cam gear, cam (L), noise reducing spring (30) and three parallel pins from the cam shaft.



Installation

9. Attach the cam shaft assembly in the reverse order of steps 6 to 8.
10. Insert the portion A of noise reducing spring (30) into the hole of chassis, then insert the portion B into the hole of cam (L) by rotating it in the direction of the arrow.



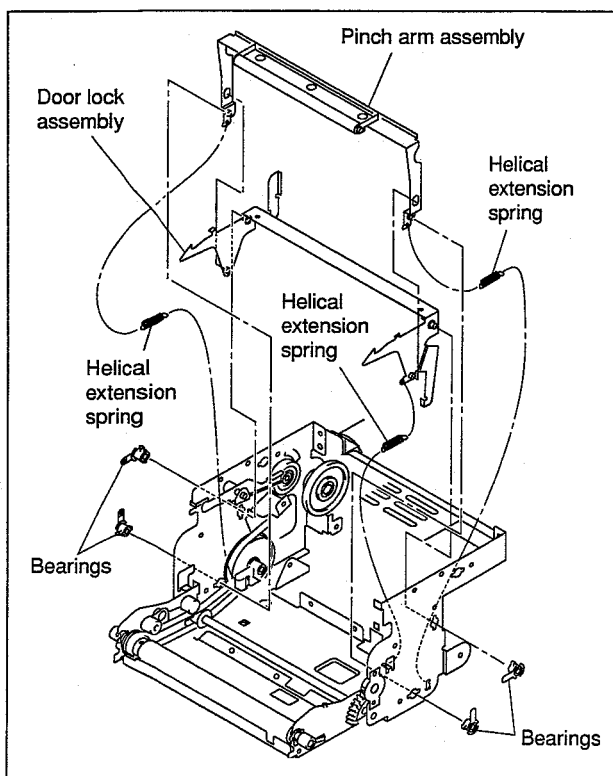
11. Assemble this unit in the reverse order of steps 1 to 5.

1-4-6. Pinch Arm Assembly

Note

When replacing the pinch arm subassembly, be extremely careful not to touch it with bare hands or dirty gloves. If the pinch arm subassembly is contaminated, clean it with the ethyl alcohol.

1. Remove the top cover. (Refer to Section 1-3-1.)
2. Remove the front panel assembly. (Refer to Section 1-3-2.)
3. Remove the mechanical deck assembly. (Refer to Section 1-4-2.)
4. Remove the thermal head. (Refer to Section 1-4-3.)
5. Remove the paper holder assembly. (Refer to step 4 of Section 1-4-7.)
6. Remove the three helical extension springs.
7. Remove the four bearings, then remove the door lock assembly and pinch arm assembly in the direction of the arrow.
8. Remove the pinch arm assembly from the door lock assembly.



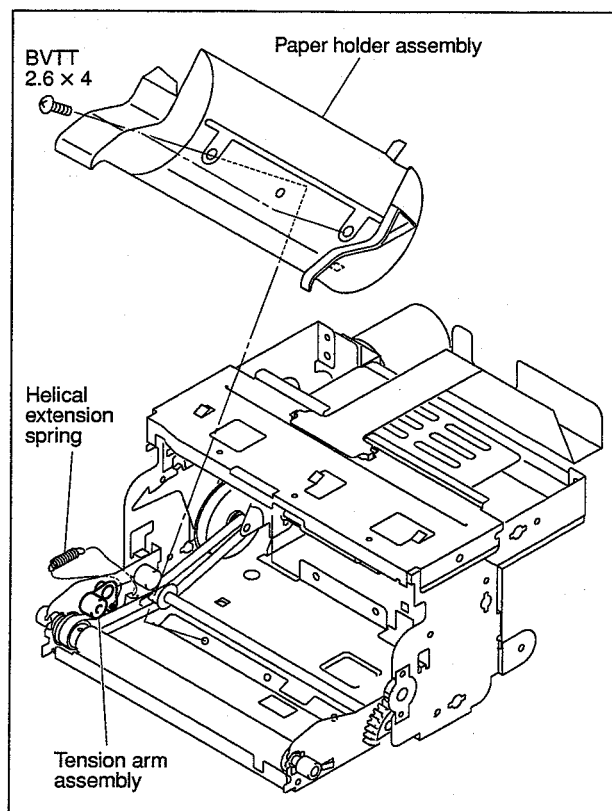
9. Attach the pinch arm assembly in the reverse order of steps 1 to 8. After attaching the pinch arm assembly, clean it with ethyl alcohol.

1-4-7. Platen Roller

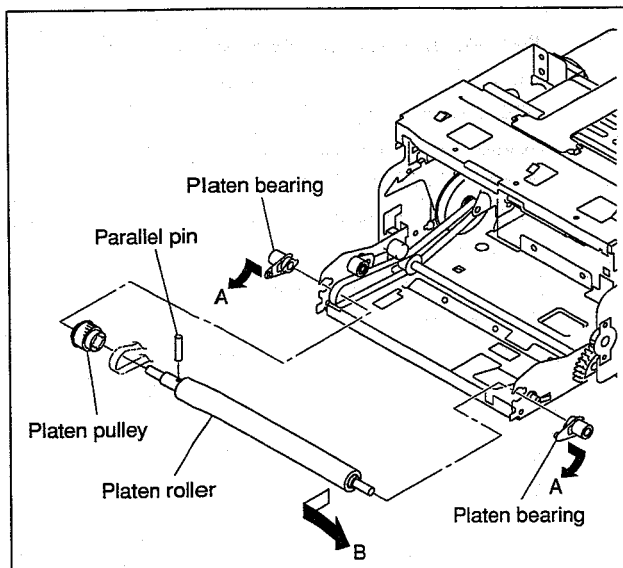
Note

When replacing the platen roller, be extremely careful not to touch it with bare hands or dirty gloves. If the roller is contaminated, clean it with the ethyl alcohol.

1. Remove the top cover. (Refer to Section 1-3-1.)
2. Remove the front panel assembly. (Refer to Section 1-3-2.)
3. Remove the mechanical deck assembly. (Refer to Section 1-4-2.)
4. Remove the two screws, then remove the paper holder assembly.
5. Remove the helical extension spring from the tension arm assembly.



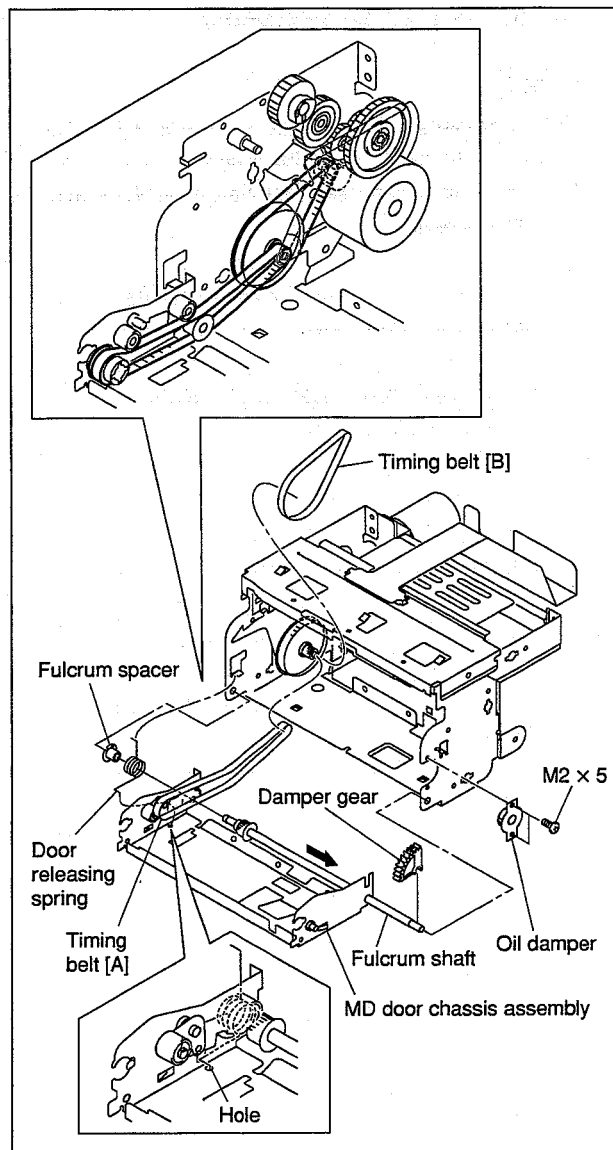
6. Remove the two platen bearings by rotating them in the direction of the arrow A.
7. Remove the platen roller in the direction of the arrow B.
8. Remove the platen pulley and parallel pin from the platen roller.



9. Attach the platen roller in the reverse order of steps 1 to 8.

1-4-8. Timing Belt

1. Remove the top cover. (Refer to Section 1-3-1.)
2. Remove the front panel assembly. (Refer to Section 1-3-2.)
3. Remove the mechanical deck assembly. (Refer to Section 1-4-2.)
4. Remove the paper holder assembly. (Refer to step 4 of Section 1-4-7.)
5. Remove the two screws, then remove the oil damper.
6. Remove the damper gear.
7. Remove the door releasing spring from the hole of MD door chassis, then remove the MD door chassis assembly.
8. Remove the fulcrum spacer, then remove the door releasing spring.
9. Pull out the fulcrum shaft from the MD door chassis assembly in the direction of the arrow.
10. Remove the timing belt [A] and timing belt [B].



11. Attach the timing belt [A] and timing belt [B] in the reverse order of steps 1 to 10.

1-5. Procedure Required for Replacement

When replacing the following parts, perform each required process according to the table below. For the procedure before and after performing the required process, refer to Section 2-1.

Parts	Required process	Reference
MA-132 board	Firmware Version Upgrade	Section 2-5
IC103 (MA-132 board)		
KY-572 board	Calibration and Electrical Conductivity Check	Section 2-2
Switching regulator	Head Voltage Adjustment	Section 2-3
Thermal head		

1-6. Unleaded Solder

Boards requiring use of unleaded solder are printed with a lead free mark (LF) indicating the solder contains no lead.

(Caution: Some printed circuit boards may not come printed with the lead free mark due to their particular size.)

 : LEAD FREE MARK

Notes

- Be sure to use the unleaded solder for the printed circuit board printed with the lead free mark.
- The unleaded solder melts at a temperature about 40 °C higher than the ordinary solder, therefore, it is recommended to use the soldering iron having a temperature regulator.
- The ordinary soldering iron can be used but the iron tip has to be applied to the solder joint for a slightly longer time. The printed pattern (copper foil) may peel away if the heated tip is applied for too long, so be careful.

Section 2

Electrical Alignment

2-1. Procedure before and after Adjustment

Print out the record of user setting before performing the board replacement and adjustment. For the procedure of printing out the record, refer to Section 2-1-1.

If the history record of user setting cannot be printed due to the failure of this unit, reset the unit to the factory setting after performing the board replacement and adjustment. (Refer to Section 2-1-3.)

2-1-1. Procedure of Printing the User Setting Record (Before Adjustment)

Print out the top menu record of setting (last setting) and the list of all setting in the following procedure. After completing the board replacement and adjustment, if the setting is different from the contents of record printed before adjustment, adjust the setting so that it becomes the same as the setting before adjustment. Complete the procedure by adjusting the setting to the contents of top menu record.

Procedure

1. Turn on the **POWER**.
"READY" is displayed on LCD of this unit.
2. Press the **OPEN** button to open the door panel.
3. Set the thermal paper and close the door panel.
4. Press the jog dial.
5. Print out the record of the top menu (last setting) displayed on LCD.
6. Rotate the jog dial to display "MENU" on LCD, then press the jog dial.

All settings are printed on the thermal paper.

Note

Be sure to keep the printed sheets (user setting) because they are used as the reference to check the setting after adjustment.

2-1-2. User Setting Check Procedure (After Adjustment)

After completing the adjustment, reset this unit to the user setting in the following procedure.

Procedure

1. Print out the setting of this unit.
(Refer to steps 1 to 6 of Section 2-1-1.)
2. Compare the setting list printed in step 1 with the setting list (used as reference) printed in step 6 of Section 2-1-1.

Note

If there is any difference between the settings, adjust to the reference setting using the jog dial.

If there is no difference, press the jog dial.
(Setting is completed.)

3. After adjusting the setting to the reference setting, press the jog dial.
The adjusted setting is displayed on LCD.
4. Check that the contents of setting are correct, then press the jog dial.

2-1-3. Factory Setting

Procedure

1. Turn on the **POWER** while pressing the **OPEN** button.

Note

The beep sound is made immediately after turning on the **POWER** and after that again.

2. Release the **OPEN** button, then press the **COPY** button.

Note

Press the **COPY** button within 3 seconds after the second beep sound in step 1 is made.

3. Check that this unit becomes the following state.
(Change to the factory setting)
(1) Backlight is off.
(2) Backlight lights in green.
(3) Backlight lights in red.
(4) Flashes two times automatically.
(5) Beep sound is made.

2-2. Calibration and Electrical Conductivity Check

After replacing the KY-572 or MA-132 board, perform the calibration of brightness and contrast volumes, and perform the electrical conductivity check of each button.

1. Turn on the power while pressing the **OPEN** button and **FEED** button simultaneously.

The service mode starts.

Note

Do not release the **OPEN** button and **FEED** button before the beep sound is made.

2. Press the jog dial two times.
"SVC" and then "PATAN" are displayed on LCD in order.
3. Rotate the jog dial to display "BR:CAL".
4. Press the jog dial.
The calibration mode of brightness starts.
 - (1) Rotate the BRIGHT volume fully to the left in the state that "BR:LEF" is displayed on LCD, then press the jog dial.
 - (2) Rotate the jog dial to display "BR:RIG" and rotate the BRIGHT volume fully to the right in the state that "BR:RIG" is displayed on LCD, then press the jog dial.
 - (3) Rotate the jog dial to display "BR:CEN" and return the BRIGHT volume to the center in the state that "BR:CEN" is displayed on LCD, then press the jog dial.
5. Rotate the jog dial to display "BACK", then press the jog dial.
6. Rotate the jog dial to display "CO:CAL".
7. Press the jog dial.

The calibration mode of contrast starts.

- (1) Rotate the CONT volume fully to the left in the state that "CO:LEF" is displayed on LCD, then press the jog dial.
- (2) Rotate the jog dial to display "CO:RIG" and rotate the CONT volume fully to the right in the state that "CO:RIG" is displayed on LCD, then press the jog dial.
- (3) Rotate the jog dial to display "CO:CEN" and return the CONT volume to the center in the state that "CO:CEN" is displayed on LCD, then press the jog dial.

8. Check the electrical conductivity of the **COPY** button.

Press the **COPY** button.

The error beep sound is made.

Note

The electrical conductivity of other buttons can be checked by calibration.

9. Turn off the power.

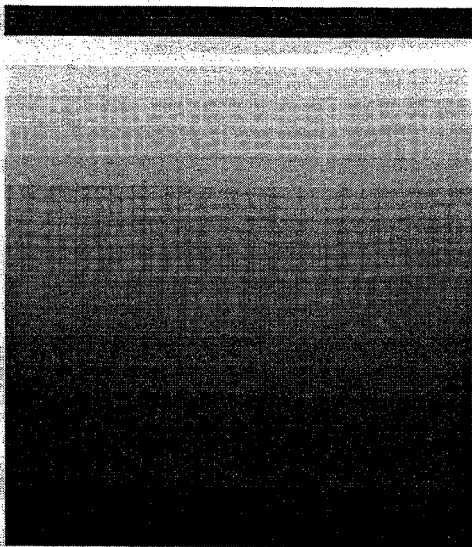
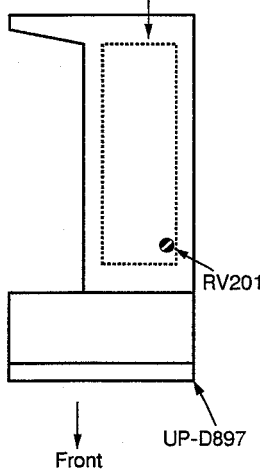
2-3. Head Voltage Adjustment

After replacing the thermal head or the switching regulator, perform this adjustment.

Note

Before starting the replacement, print out the stairstep test pattern which is used as the reference of adjustment.

Before replacing the switching regulator, measure the voltage of TP302 on the MA-132 board and take a note of the value.

State during adjustment	Specification	Adjustment point
<ul style="list-style-type: none"> Input signal: None Set the POWER switch to ON while pressing the OPEN and FEED buttons. When pressing the jog dial three times, "SVC", "PATAN", and "PA:CRS" are displayed in order. Rotate the jog dial in this state to display "PASTP" and press the jog dial. Then, the stairstep test pattern is printed. 	<p>Note</p> <p>Do not release the buttons before checking that the backlight blinks.</p>  <p>Test pattern</p> <p>After replacing the switching regulator Adjust ⚙RV201 so that the voltage becomes the same as the voltage of TP302 measured before adjustment. Print out the stairstep test pattern after adjustment and check that it is in the same level as the test pattern printed before adjustment.</p> <p>After replacing the head Adjust ⚙RV201 so that the stairstep test pattern becomes the same level as the test pattern printed before adjustment.</p>	<p>⚙RV201/ Switching regulator</p> <p>Switching regulator (right side)</p>  <p>RV201</p> <p>UP-D897</p> <p>Front</p>

2-4. Initialization of Print Count History

After replacing the thermal head, perform the initialization of print count history.

State during adjustment	Specification	Adjustment point
<ul style="list-style-type: none">• Input signal: None• Set the POWER switch to ON while pressing the OPEN and FEED buttons.• When pressing the jog dial two times, "SVC" and "PATAN" are displayed in order. Rotate the jog dial in this state to display "RESET" and press the jog dial. "R:MENUE" is displayed and rotate the jog dial. After displaying the "R:H.PRN", then press the jog dial.	<p>Check that "RESET" is displayed.</p> <p>The initialization of print count history is completed (count becomes "0").</p>	None

2-5. Firmware Version Upgrade

After replacing the MA-132 board or IC103 on the MA-132 board, be sure to perform the firmware version upgrade.

Note

Never turn off the power during the firmware version upgrade.

Required equipment

- Personal computer (hereafter referred to as PC)
(USB interface is mounted.)
OS: Windows 2000/XP
Driver: Driver software of UP-D897 is installed.

- Utility software for version upgrade

Note

Download the adjustment utility software from the URL described in the technical memo.

- Latest firmware

Note

Download the latest firmware from the GSP homepage or from the URL described in the technical memo.

- USB cable

Note

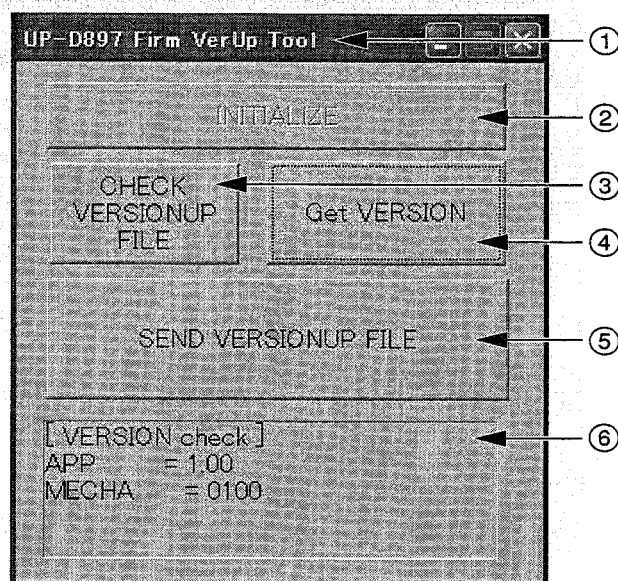
Use the supplied USB cable or the equivalent (USB2.0 certified product).

Preparation

1. Connect this unit and PC using the USB cable.
2. Turn on the power of this unit and PC.
3. Install the driver software in PC.
(Only when it is not installed.)
4. Copy the latest firmware to the directory same as the version upgrade utility.

Version upgrade

1. Start the version upgrade utility software.
The version upgrade utility software screen is displayed.



Number	Description
①	Model name to be upgraded
②	Search for the version upgrade model
③	Check of version upgrade file information
④	Check of firmware version written in this unit
⑤	Write the firmware in IC103 on the MA-132 board.
⑥	Status display window

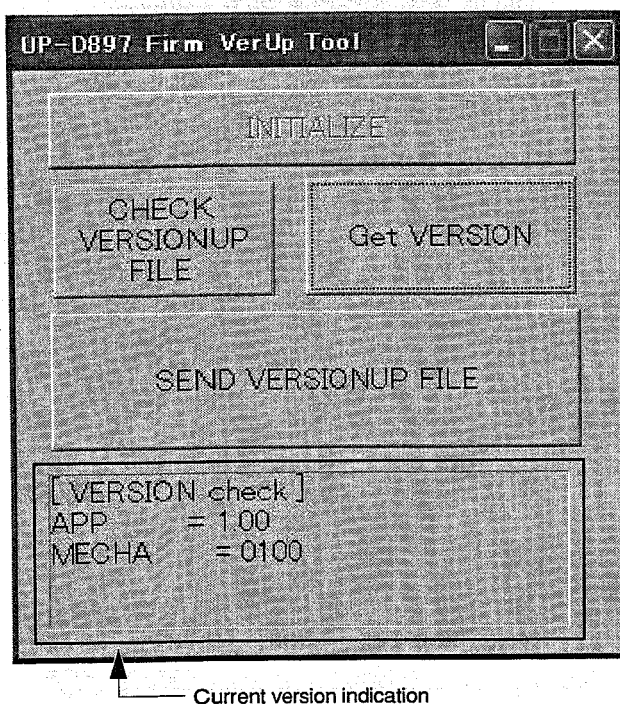
2. Click the **INITIALIZE** button.

Note

In the case that the version upgrade utility software for the version upgrade of this unit is installed, the **CHECK VERSIONUP FILE** and **Get VERSION** buttons are enabled. In case that the cable is not connected or the version upgrade utility software for the version upgrade of this unit is not installed, the **CHECK VERSIONUP FILE** and **Get VERSION** buttons are disabled in gray out state.

When the **CHECK VERSIONUP FILE** and **Get VERSION** buttons are in gray out state, check the connection of PC and this unit, or the version upgrade utility software.

3. Click the **Get VERSION** button.
The installed firmware version is displayed.



Procedure after completion of version upgrade

1. Turn off the power of this unit and PC, and then disconnect the USB cable.

4. Check or take a note of the version displayed in step 3.
5. Click the **CHECK VERSIONUP FILE** button.
The VUP file information is displayed on another window.
6. Check the version and date to make sure that the downloaded firmware is the latest version.
7. Click the **SEND VERSIONUP FILE** button.
The writing of firmware starts.

Note

When the writing starts, the LED backlight changes from staying lit to blinking, the beep sound is made. After this, the writing is completed when the backlight changes from blinking to staying lit.

8. Check that the writing is completed, and then turn the power of this unit off and on again (restart).
9. Start the version upgrade utility software.
10. Click the **INITIALIZE** button.
11. Click the **Get VERSION** button.
12. Make sure that the firmware is the latest version on the utility screen.
13. Exit the version upgrade utility software.

Section 3

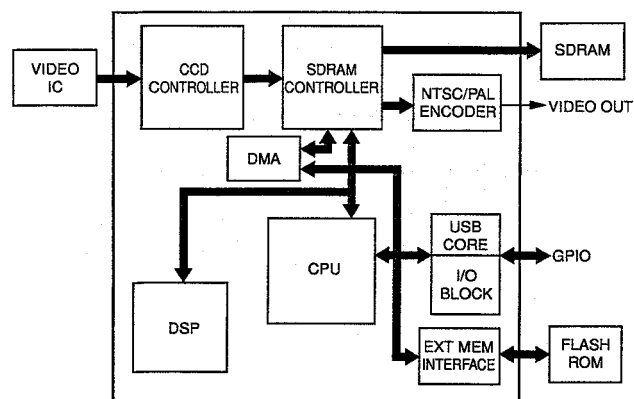
Circuit Description

3-1. System Control Block

3-1-1. Outline

System control is performed using IC104 (TMS320DM310ZHK22) on the MA-132 board. The system control block consists of the following blocks.

- CPU block (ARM925)
- SDRAM control block
- External memory control block (Flash memory, etc.)
- DSP block (Image processing)
- External interface block (USB1.0, memory cards, video encoder, and CCD interface)



Block diagram of IC104

3-1-2. Block Diagram of Electrical Block

Refer to "Section 6 Block Diagram".

3-2. Head/Mechanical Control Block

3-2-1. Outline

The thermal head/mechanical control block is the circuit block of IC202 (CXD9182AGG) on the MA-132 board. There is an external I/O block except the thermal head/mechanical control block.

3-2-2. Platen Motor Control

A platen driving stepping motor controls the forward rotation/reverse rotation and rotation speed when IC202 controls driving transistors (Q603 to Q606).

IC202	Signal name	State			
Pin 46	PM_A1	L	L	H	H
Pin 47	PM_A2	H	H	L	L
Pin 92	PM_B1	L	H	H	L
Pin 93	PM_B2	H	L	L	H

Forward rotation →
Reverse rotation ←

3-2-3. Thermal Head UP/DOWN Control

A thermal head UP/DOWN DC motor is driven using a driving circuit (IC201 on the SE-768 board). The DC motor can be rotated in the forward and reverse directions. It is controlled by IC202. Two types of optical position sensors (photo-interrupters PH201 and PH203 on the SE-768 board) detect the DC motor position and IC202 reads it.

Operation of Head UP/DOWN Motor

DC motor	IC202 (pin 1) or CN204 (pin 8) DCM_0	IC202 (pin 2) or CN204 (pin 7) DCM_1	Operation
Forward rotation	L	H	The thermal head is raised.
Reverse rotation	H	L	The thermal head is lowered.
Brake	H	H	Stop
Stop	L	L	Stop

State of position sensor

Position	IC202 (pin 53) or CN204 (pin 3) HEAD_P_SENSE	IC202 (pin 96) or CN204 (pin 5) HEAD_P2_SENSE	State
PRINTING	L	H	Printing
HOME	H	L	Standby (Usually)
DOOR OPEN	H	H	Door unlocked

3-2-4. Monitoring of Door Sensor

The door position is read using an optical door position sensor (photo-interrupter PH202 on the SE-768 board) by IC202.

State of door position sensor

Position	IC202 (pin 87) or CN204 (pin 2) DOOR_SENSE	State
CLOSE	H	The door is closed.
OPEN	L	The door is opened.

3-2-5. Monitoring of Paper Sensor

Whether thermosensible paper is correctly set in this unit is detected using two pairs of optical paper sensors (photo-transistors Q102 and Q302 on the KY-572 and SE-769 boards) and read using IC202.

State of paper sensor

IC202 (pin 43) or CN201 (pin 7) AD3 (PAPER_SENSE)	IC202 (pin 175) or CN205 (pin 2) AD5 (PP_EMP_SENSE)	State
H	H	Paper
L	L	No paper
H	L	No paper (Paper exists in an eject port and does not exist in a tray.)
L	H	No paper (Paper does not exist in an eject port and exists in a tray.)

3-2-6. Monitoring of Head Temperature Sensor

The change in the resistance value of a thermistor in a thermal head is converted into a voltage and read using IC202. The A/D-converted voltage value corrects the density (gamma), controls the head cooling fan motor, and discriminates whether to clean the head.

3-2-7. Control of Head Fan Motor (for Head Cooling)

A head fan motor operates when IC202 controls driving transistors (Q607 and Q608). The head fan motor is turned on when the head temperature is more than approximately 62°C (cooling) or during printing.

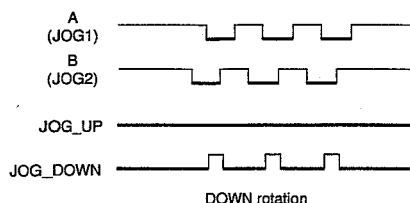
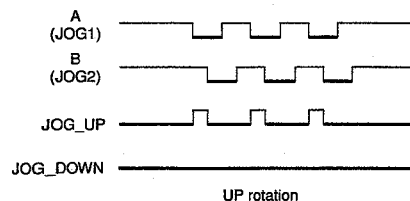
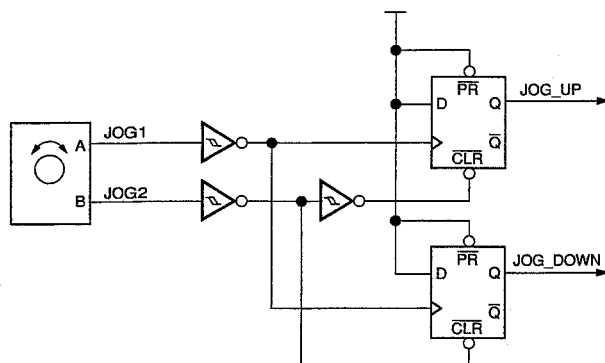
Operation of head fan motor

IC202 (pin 94) HEAD_FAN	Operation
L	OFF
H	ON

3-2-8. Read of Buttons

The **OPEN**, **COPY**, **FEED**, and jog dial buttons on the front panel are monitored. Each button (not including jog dial buttons UP and DOWN) is shifted to operation after the falling of a signal is detected. Jog dial buttons UP and DOWN are shifted to operation after the rising of a signal is detected.

IC202	Signal name	Function
Pin 7	KEY1	OPEN
Pin 98	KEY2	PRINT
Pin 55	KEY3	COPY
Pin 133	KEY4	FEED
Pin 6	JOG3	ENTER
Pin 54	JOG_UP	Rotates the jog dial upward.
Pin 97	JOG_DOWN	Rotates the jog dial downward.



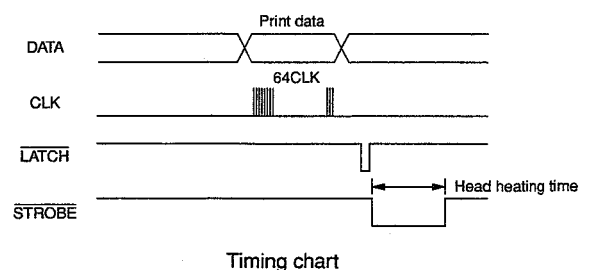
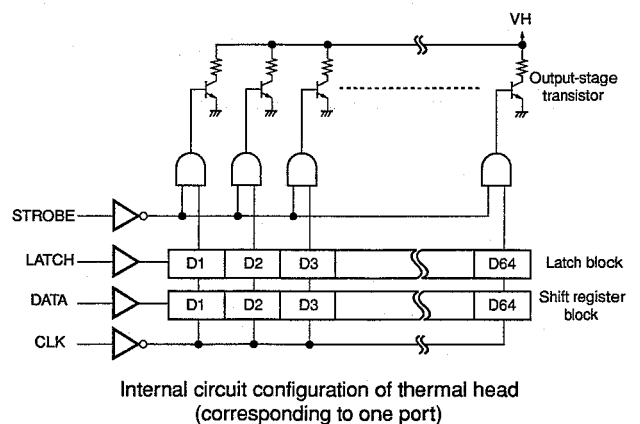
3-3. USB Interface

A USB2.0 high-speed interface is controlled by IC401 (UPD720122F) on the MA-132 board.

3-4. Thermal Head Block

3-4-1. Structure

A thermal head consists of 1280 dots (64 bits × 20) per line. There are twenty pairs of blocks below.



3-4-2. Basic Operation

Each signal is input from IC202 to the thermal head for operations below.

- (1) Print data is input to the shift register block in synchronization with a CLK pulse. (64-bit data)
- (2) The data input in step (1) is moved from the shift register block to the latch block when a latch pulse is input.
- (3) When a STB pulse is input, the "H" and "L" data of a latch block turn on and off an output-stage transistor and a resistor is heated for the color development of thermosensible paper.

3-4-3. Temperature Correction

The print energy required for thermosensible paper changes moment by moment due to the heating and thermal storage of a thermal head during change in room temperature or continuous printing. Therefore, the corresponding correction is required. In this unit, IC202 measures the temperature change of a thermal head from the internal thermistor of the thermal head. IC202 then converts the temperature change into 8-bit head temperature data and corrects the change in concentration for the temperature on which gamma characteristics were reflected. The concentration change can be corrected by controlling the width of a STB pulse.

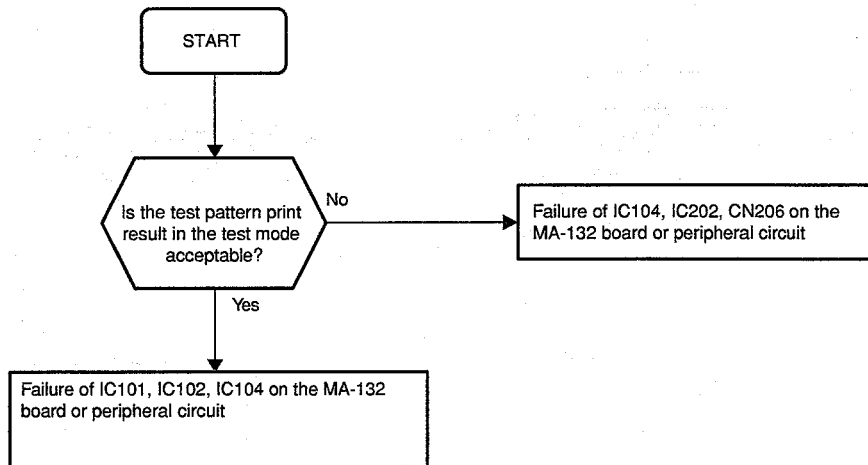
3-4-4. Correction of Resistor Count

The total current flowing through a thermal head differs in the state where the resistors of the thermal head are all turn on or partially turned on. Therefore, an error occurs in the energy applied to each resistor. When print is made without correcting an error, a stripe occurs in the print result at the point where the number of resistors in which a thermal head is turned on changes rapidly. A circuit that corrects this stripe is incorporated into IC202.

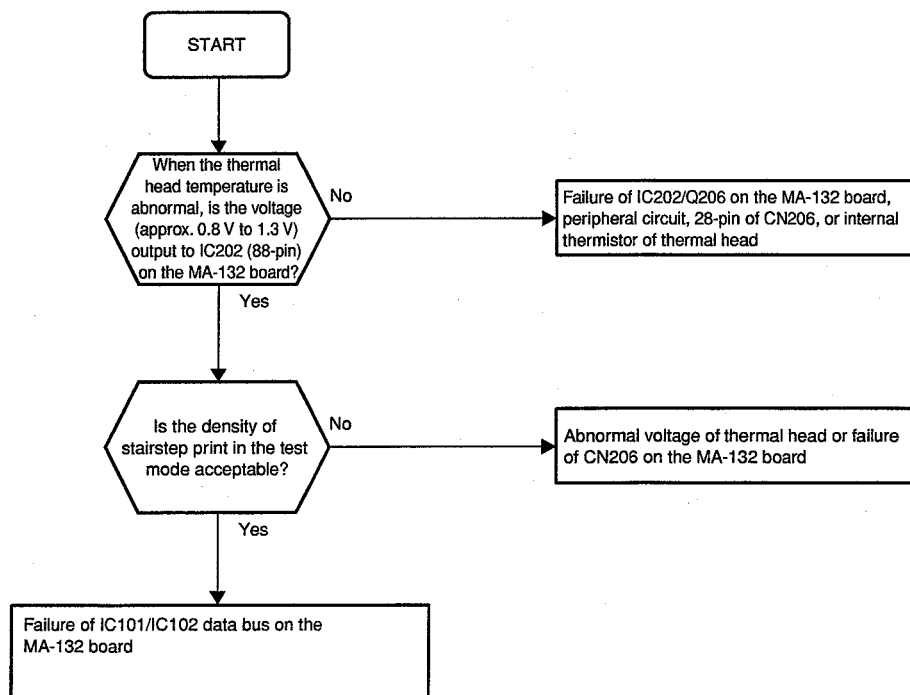
Section 4

Troubleshooting

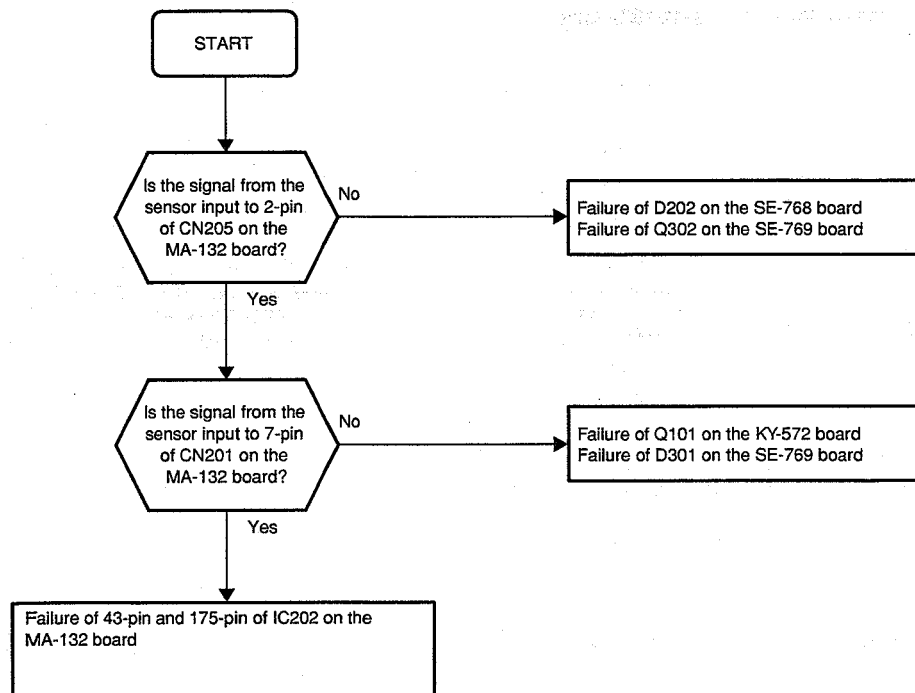
4-1. Print result is not satisfactory



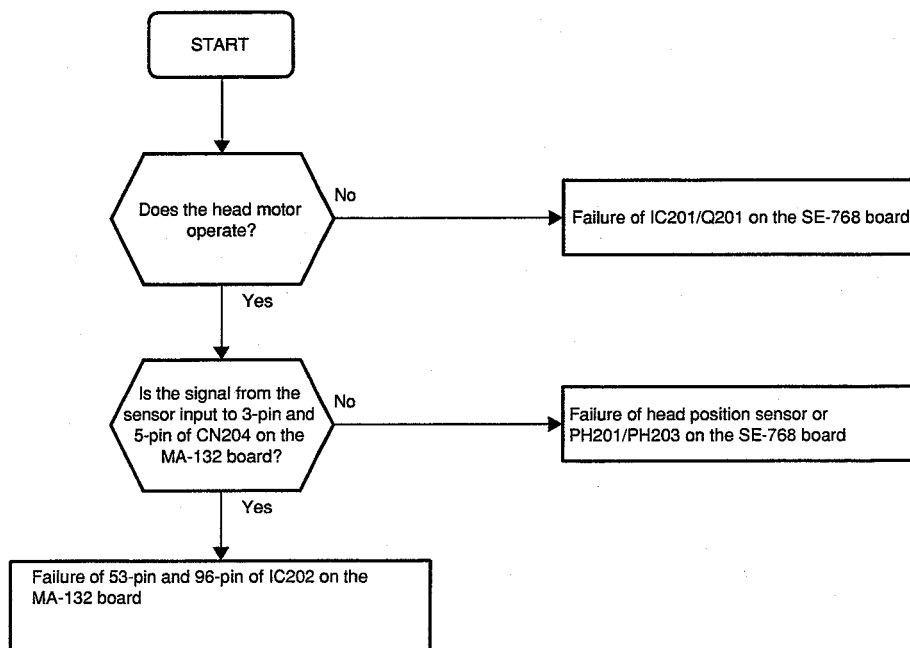
4-2. Print result density is too high or low



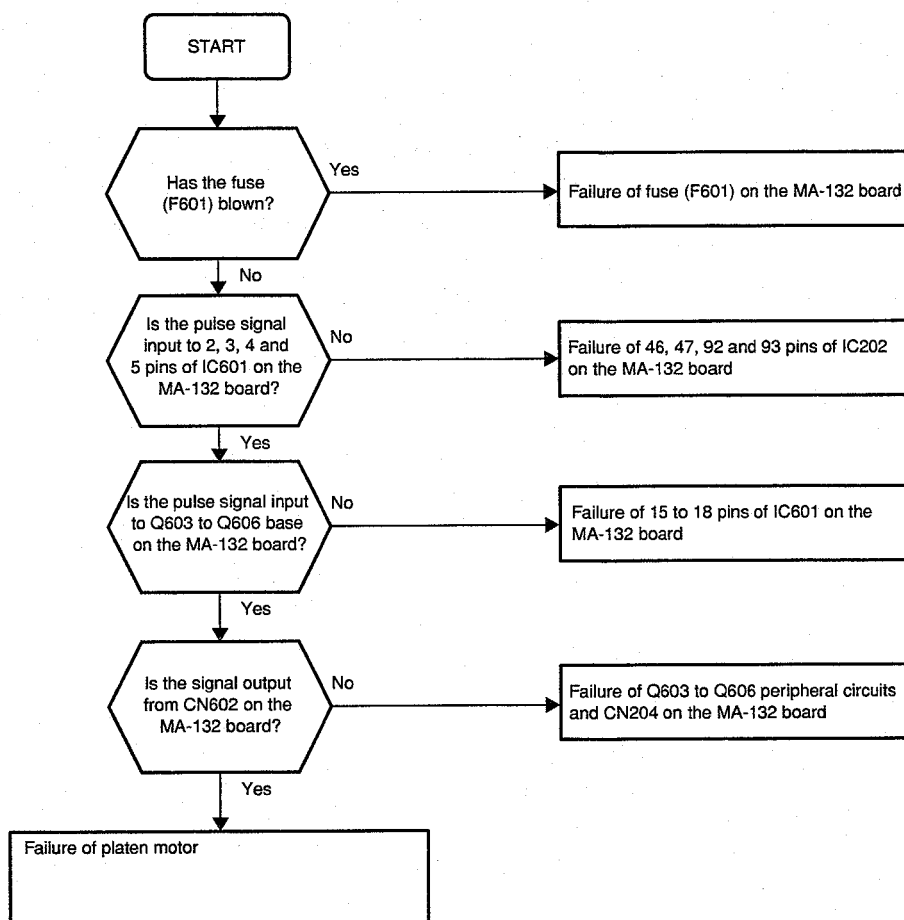
4-3. Trouble of determining presence or absence of paper



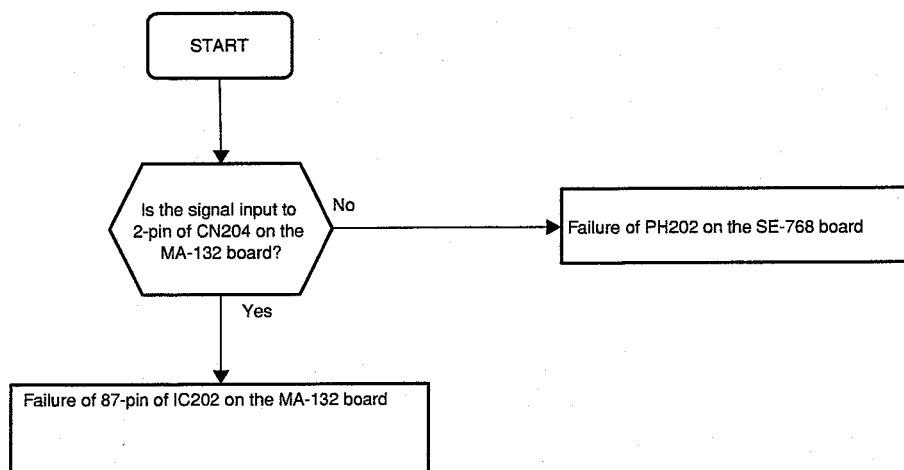
4-4. Thermal head UP/DOWN operation trouble



4-5. Feed operation trouble



4-6. Trouble of determining door open/close



Section 5

Service Mode (Self-diagnosis Function)

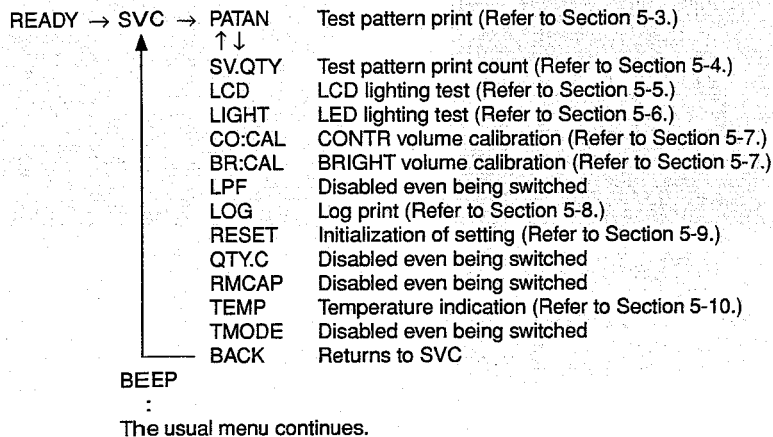
5-1. Startup Procedure

1. Turn on the power while pressing the **FEED** button and **OPEN** button.
2. Check that the backlight starts blinking after approximately 3 seconds, and then release each button.
The service mode starts.

5-2. Service Mode Menu

When the unit is activated in service mode, the "SVC" menu is added one line above the "BEEP" menu. Press the jog dial in this "SVC" menu and rotate it up and down to display the item to be diagnosed, and then press it again. For the details of each item, refer to the following sections.

When the unit is activated in service mode, the time out function does not work. Therefore the unit does not exit the menu mode for approximately 20 seconds without any button operation.



5-3. Test Pattern Printing

Select the test pattern and press the jog dial to start the printing.

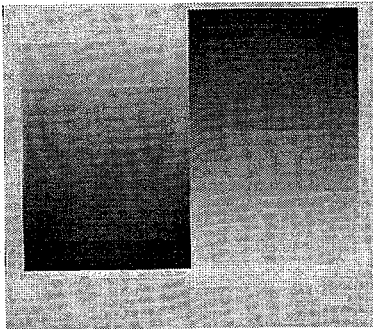
The preset number of test patterns are printed by setting the print count previously in "SV.QTY".

To interrupt the printing, press the **FEED** button or **OPEN** button.

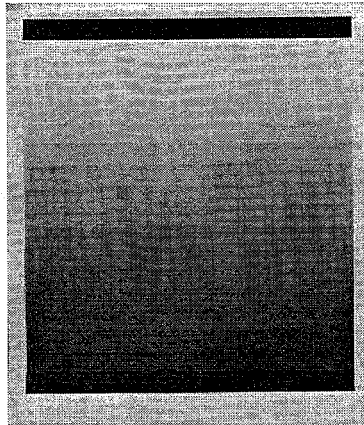
When adjusting the head voltage, perform in the following conditions.

- Set "GAMMA" to "GA-2".

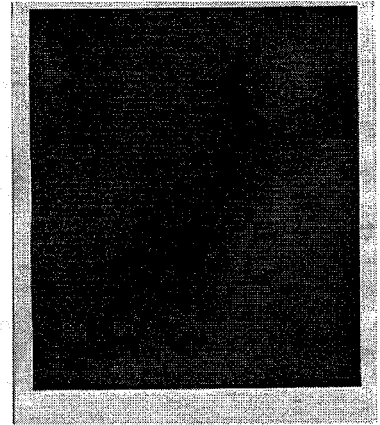
PATAN	PA:FF	All white
	:	Gray
	PA:00	All black
	PA:W/B	White in the left half, black in the right half
	PA:B/W	Black in the left half, white in the right half
	PA:FFh	All white (large size)
	:	Gray (large size)
	PA:00h	All black (large size)
	PA:STP	Stairstep
	PA:CRS	Cross step
	BACK	Returns to PATAN



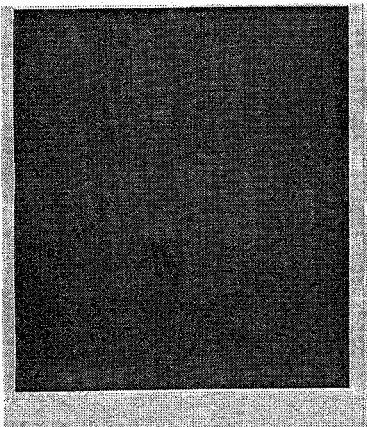
PA-CRS (cross step)



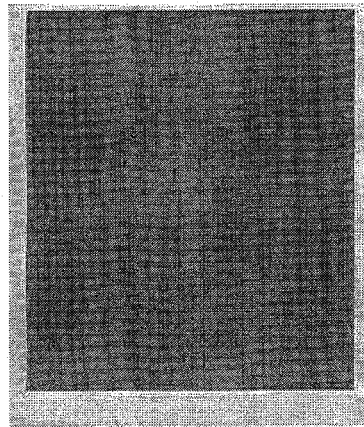
PA-STP (stairstep)



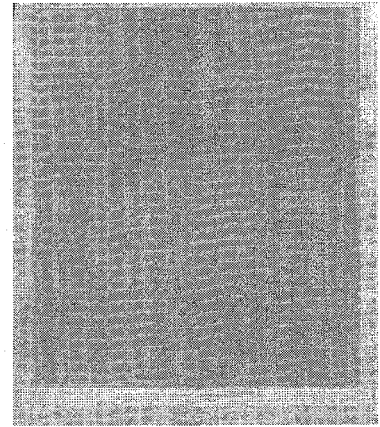
PA:00h



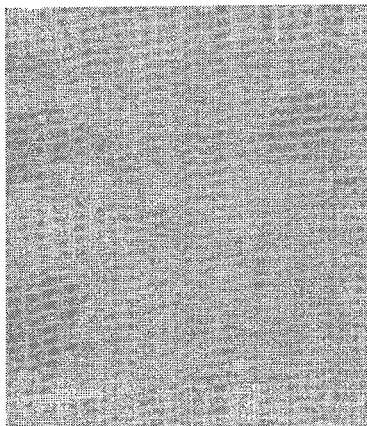
PA:3Fh



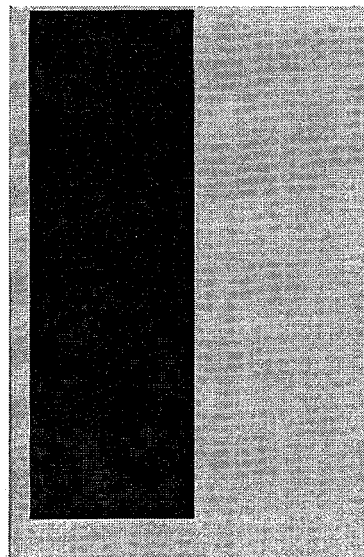
PA:7Fh



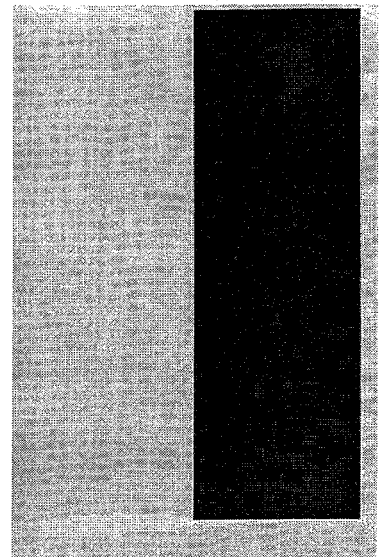
PA:BFh



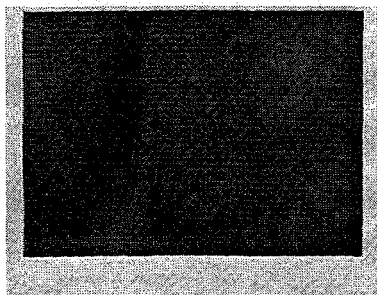
PA:FFh



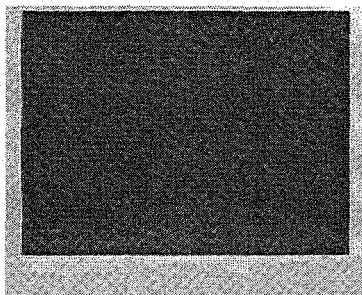
PA:B/W



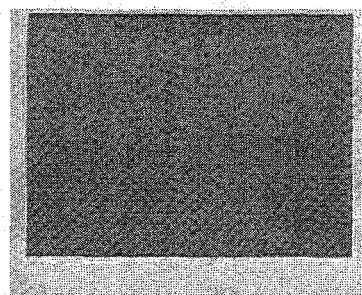
PA:W/B



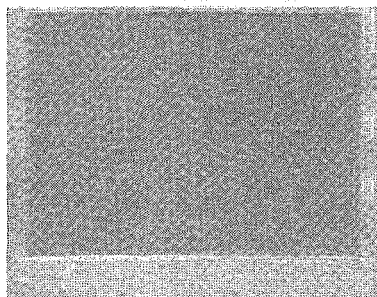
PA:00



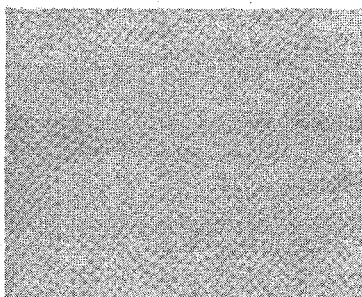
PA:3F



PA:7F



PA:BF



PA:FF

5-4. Test Pattern Print Count

Set the print count of the test pattern printing (PATAN).

SV.QTY	SQ	C	When setting the count to the continuous printing.
	S.Q	9	When setting the count to "9".
	:		
	S.Q:	1	When setting the count to "1".
	BACK		Returns to SV.QTY.

5-5. LCD Lighting Check

Check the portion that is not lit by fully lighting the LCD.

LCD (full lighting) Check if it is lit.

Returns to LCD when the jog dial is pressed.

BACK Returns to LCD.



LCD (full lighting)

5-6. LED Lighting Check

Check if the backlight of the LCD and RECEIVING LED are lit.

- LIGHT LI:RCV Check if the RECEIVING LED lights in green. (LCD lights in green.)
 LI:AMB Check if the backlight of the LCD lights in amber.
 LI:GRN Check if the backlight of the LCD lights in green.
 BACK Returns to LIGHT.

5-7. Front Panel Volume Calibration

Perform the calibration of the CONTR volume and BRIGHT volume. Perform this calibration when replacing the flexible flat cable connecting the KY-572 board or MA-132 board. Each volume is adjustable at three points: left, center and right.

- CO:CAL CO:RIG Press the jog dial in the state that the CONTR volume is fully rotated to the right.
 CO:CEN Press the jog dial in the state that the CONTR volume is at the center click position.
 CO:LEF CO:LEF Press the jog dial in the state that the CONTR volume is fully rotated to the left.
 BACK Returns to CO:CAL.
 BR:CAL BR:RIG Press the jog dial in the state that the BRIGHT volume is fully rotated to the right.
 BR:CEN Press the jog dial in the state that the BRIGHT volume is at the center click position.
 BR:LEF Press the jog dial in the state that the BRIGHT volume is fully rotated to the left.
 BACK Returns to BR:CAL.

5-8. Log Printing

The print count or error log is printed. Set the printing paper in the paper tray.

- LOG LO:OK The log is printed by pressing the jog dial.
 BACK Returns to LOG.

==== LOG ====			
Ver.1.00	Jul 27 2005 19:44:37	①	
T.PRN	200	②	
H.PRN	100	③	
T.ON	10	④	
F.ON	10	⑤	
H.TEMP	30.7	⑥	
1.1501	50	29.4	⑦
2.1302	20	27.9	
3.0000	0	0.0	
4.0000	0	0.0	
5.0000	0	0.0	
6.0000	0	0.0	
7.0000	0	0.0	
8.0000	0	0.0	

- ① Firmware version, date and time it is created
 ② T.PRN: Total print count
 ③ H.PRN: Head total print count
 ④ T.ON: Total power ON time (unit: hour)
 ⑤ F.ON: Total fan ON time (unit: hour)
 ⑥ H.TEMP: Maximum head temperature (unit: °C)
 ⑦ Error log: The eight error logs can be saved.
 1: The latest log, 8: The oldest log
 From the left: Error ID, total print count at the time of error, head temperature at the time of error

Error ID

ID	Factor
1102h	Head cannot be moved from home position to printing position. (During printing)
1103h	Head cannot be moved from home position to printing position. (During feeding)
1105h	Head cannot be moved from home position to printing position. (During cleaning)
1204h	Head cannot be moved from home position to door open position. (During door open)
1301h	Head cannot be moved from printing position to home position. (During mechanical initialization)
1302h	Head cannot be moved from printing position to home position. (During printing)
1303h	Head cannot be moved from printing position to home position. (During feeding)
1305h	Head cannot be moved from printing position to home position. (During cleaning)
1401h	Head cannot be moved from door open position to home position. (During mechanical initialization)
1404h	Head cannot be moved from door open position to home position. (During door open)
1501h	Head cannot be moved from arbitrary position to any of the positions (printing/home/door open). (During mechanical initialization)
2100h	Thermistor is shorted. (Abnormally high temperature)
2200h	Head is not connected. (Abnormally low temperature)
2300h	Preheat time out
2400h	Cool down time out
3100h	Front paper sensor detects "no paper" during printing.
5100h	Print pulse time out
6101h	Prestart time out
6102h	Paper feed before printing time out

5-9. Initialization of Setting

RESET	R:ALL	Resets the unit to the factory setting.
	R:FAN	Resets the fan ON time. This is performed when replacing the fan.
	R.H.PRN	Resets the print count record to "0". This is performed when the head is replaced.
	R:MENU	Initializes the contents that are set in the menu.
	BACK	Returns to RESET.

5-10. Temperature Indication

The current temperature data is displayed.

Example)

TEMP	H.T:30.5	Head temperature: 30.5 °C
	BACK	Returns to TEMP.

5-11. FEED Operation

When the **FEED** button is pressed in the state that the paper tray is open, the stepping motor is activated and the platen rotates in the paper eject direction.

5-12. Menu Lock

This is the function to prohibit the change of the setting from the menu and disable the switching of the front volume. It is disabled only when the unit is started normally.

Lock/Release Procedure

Turn on the power while pressing the jog dial. After checking that a beep sound is made after approximately 3 seconds, release the button. When the lock is activated, "LOCK" is displayed on the LCD and when the lock is released, "UNLOK" is displayed on the LCD. If the jog dial or the front volume is operated when the lock is activated, a "beep" alarm sound is made and "LOCK" is displayed on the LCD.

Section 6 Spare Parts

6-1. Notes on Repair Parts

1. Safety Related Components Warning

WARNING

Components marked \triangle are critical to safe operation. Therefore, specified parts should be used in the case of replacement.

2. Standardization of Parts

Some repair parts supplied by Sony differ from those used for the unit. These are because of parts commonality and improvement.

Parts list has the present standardized repair parts.

3. Stock of Parts

Parts marked with "o" at SP (Supply Code) column of the spare parts list may not be stocked. Therefore, the delivery date will be delayed.

4. Harness

Harnesses with no part number are not registered as spare parts.

In need of repair, get components shown in the list and repair using them.

5. Symbol

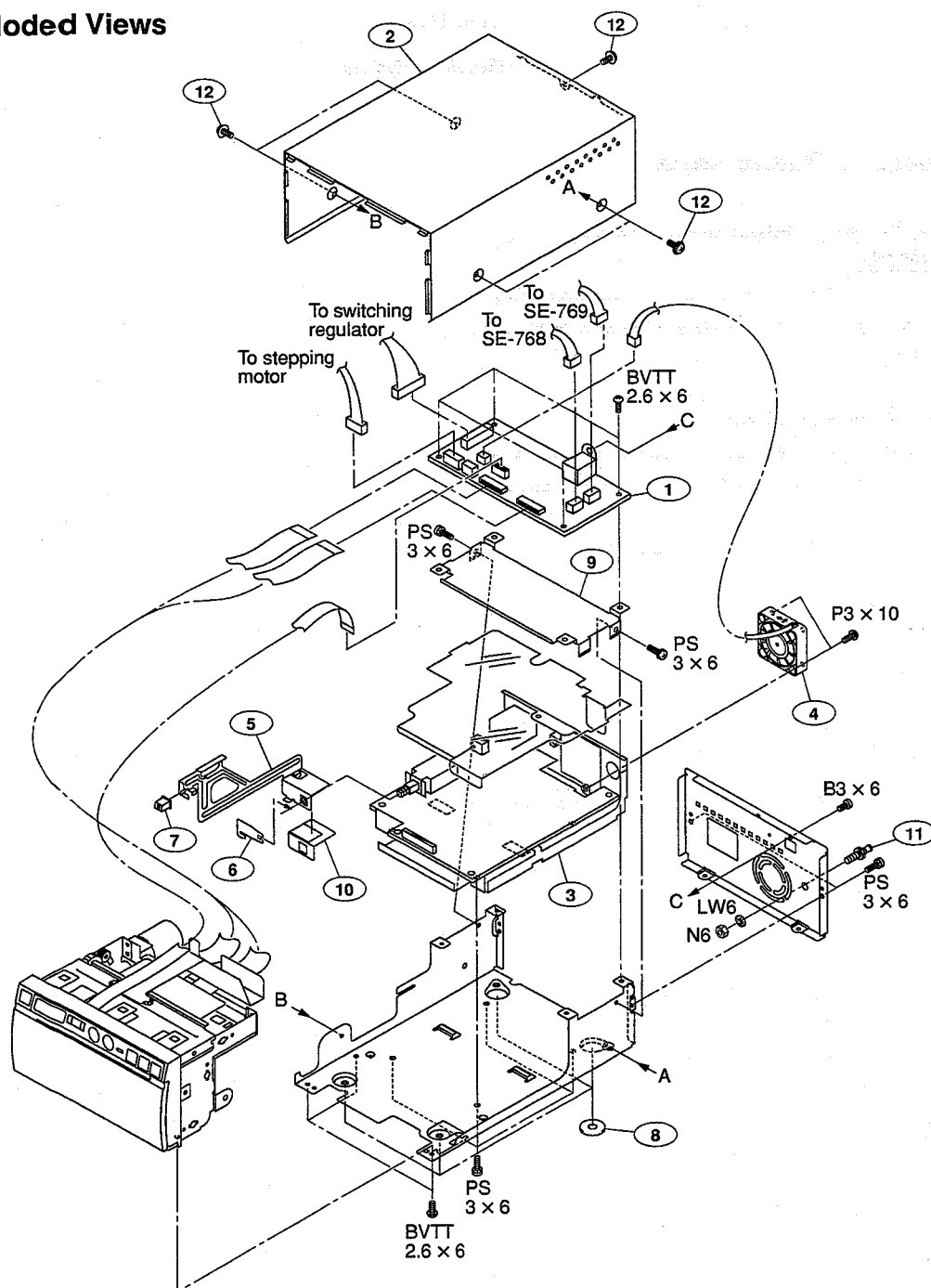
Protective earth (ground)



To identify any terminal which is intended for connection to an external conductor for protection against electric shock in case of a fault, or the terminal of a protective earth (ground) electrode.

Cover and Chassis Block

6-2. Exploded Views

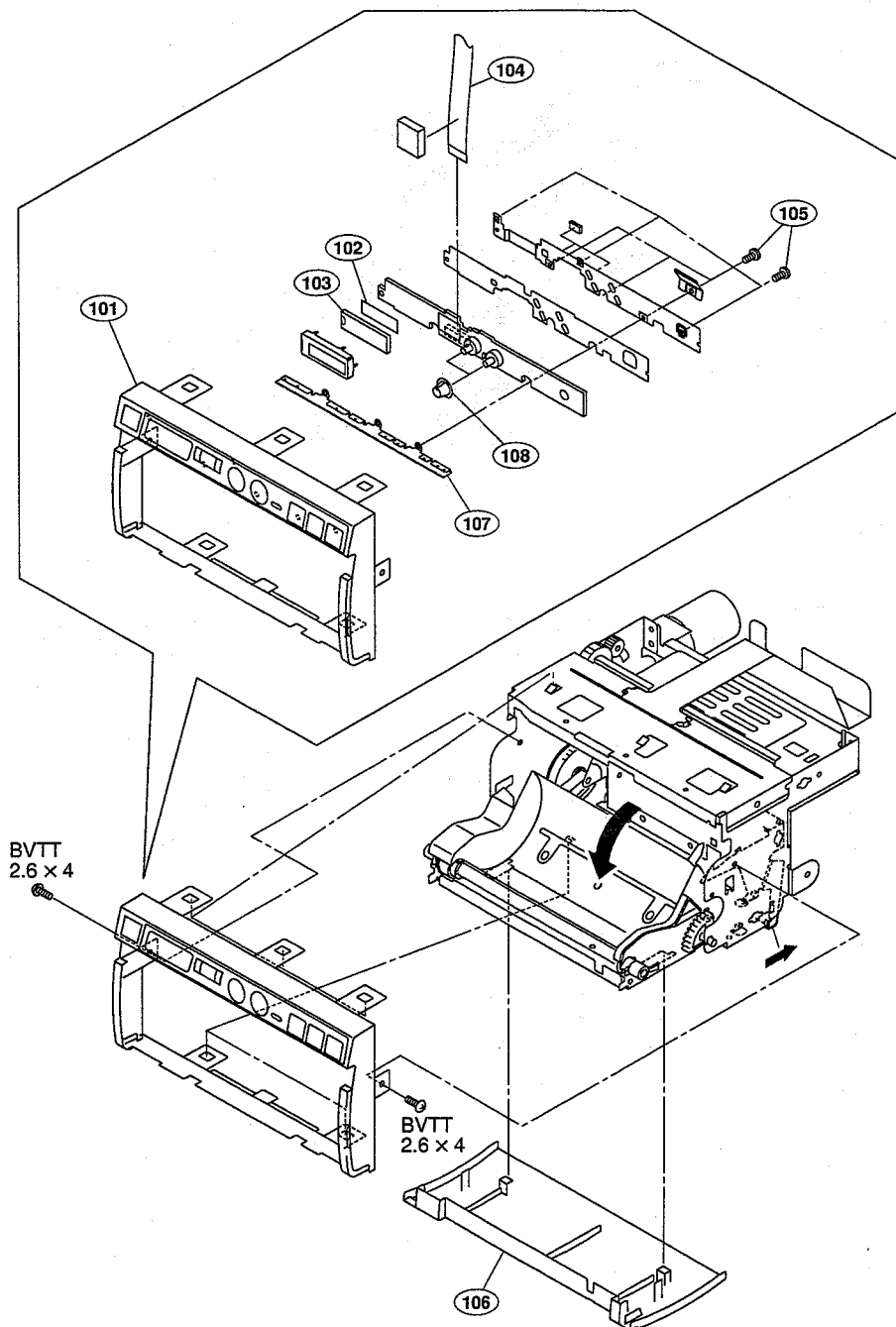


No. Part No. SP Description

1	A-1078-885-A	s MOUNTED CIRCUIT BOARD, MA-132 (D)
2	X-3698-532-3	s SUB ASSY, TOP COVER
3	Δ 1-468-934-11	s REGULATOR, SWITCHING
4	1-787-426-11	s FAN, DC (40 SQUARE)
5	3-857-727-02	s ROD, POWER SW
6	3-857-731-01	s STOPPER, SW ROD
7	3-857-732-01	s BUTTON, POWER
8	3-857-734-01	s FOOT
9	3-857-735-02	s PLATE, SHIELD
10	3-857-736-01	s SHIELD, SW
11	3-990-273-01	s TERMINAL, P.E. (for UC2/CED/SYN)

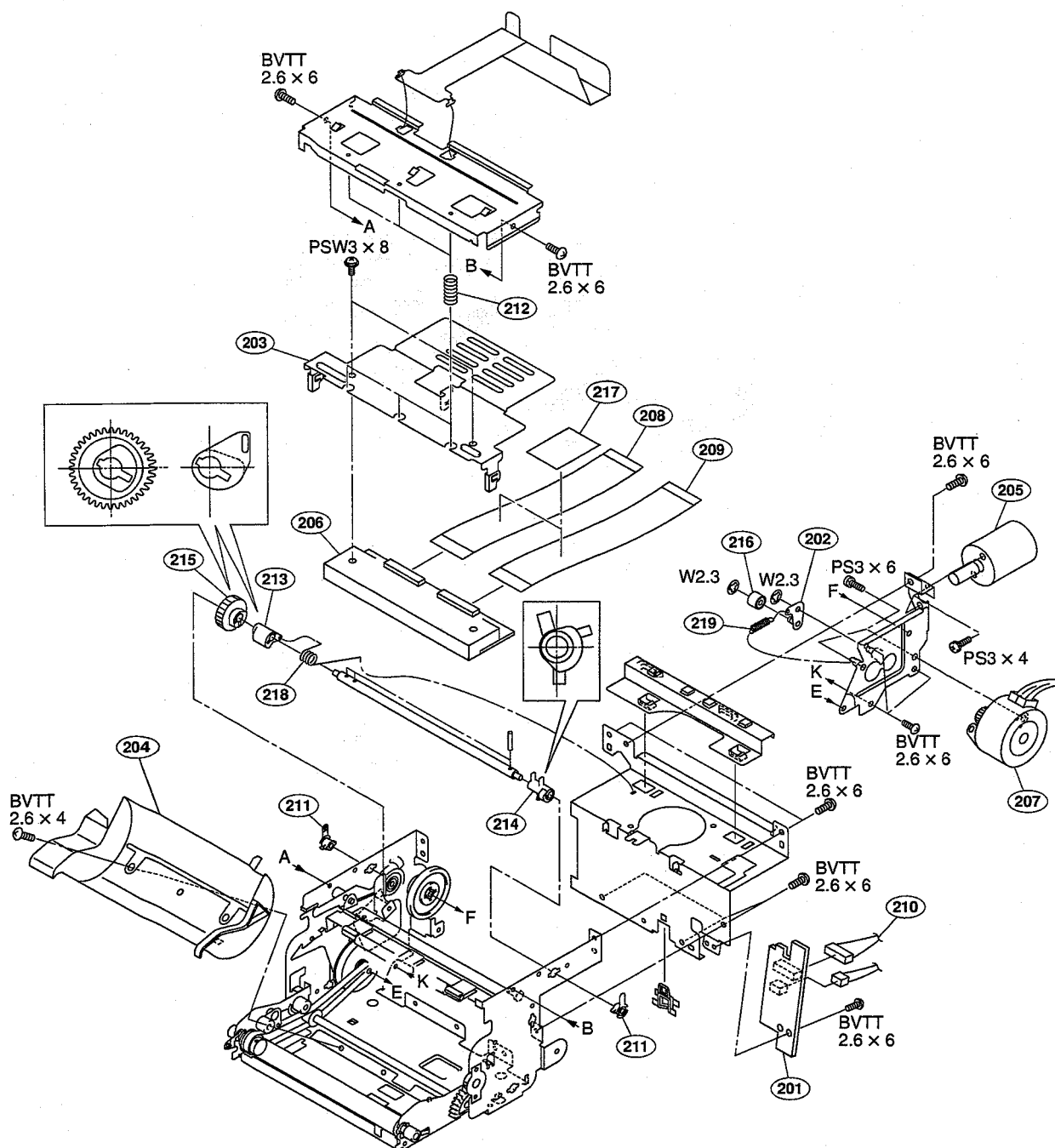
No. Part No. SP Description

12	4-886-821-11	s SCREW, M3X6 CASE (SILVER)
	7-623-425-07	s WASHER LW 6 (TYPE B) (for UC2/CED/SYN)
	7-682-149-04	s SCREW +P 3X10 (EP-FE/CU, NI, CR)
	7-682-547-04	s SCREW +B3X6
	7-682-647-09	s SCREW +PS 3X6 (EP-FE/ZNBK/CM2)
	7-684-026-04	s NUT M6 TYPE2 (EP-FE/ZN/CM2) (for UC2/CED/SYN)
	7-685-862-09	s SCREW, +BVTT 2.6X6 (EP-FE/ZNBK/CM2)



No.	Part No.	SP Description
101	X-3608-994-2	s FRONT PANEL ASSY(D)
102	1-780-223-11	s CONDUCTIVE BOARD, CONNECTION
103	1-805-786-11	s DISPLAY PANEL, LIQUID CRYSTAL
104	1-831-138-11	s CABLE, FLEXIBLE FLAT (24CORE)
105	3-713-791-45	s TAPPING SCREW M1.7
106	3-857-733-01	s PANEL, DOOR
107	3-863-111-02	s CUTTER
108	3-863-112-01	s KNOB, ROTARY
	7-685-860-09	s SCREW, +BVTT 2.6X4 (EP-FE/ZNBK/CM2)

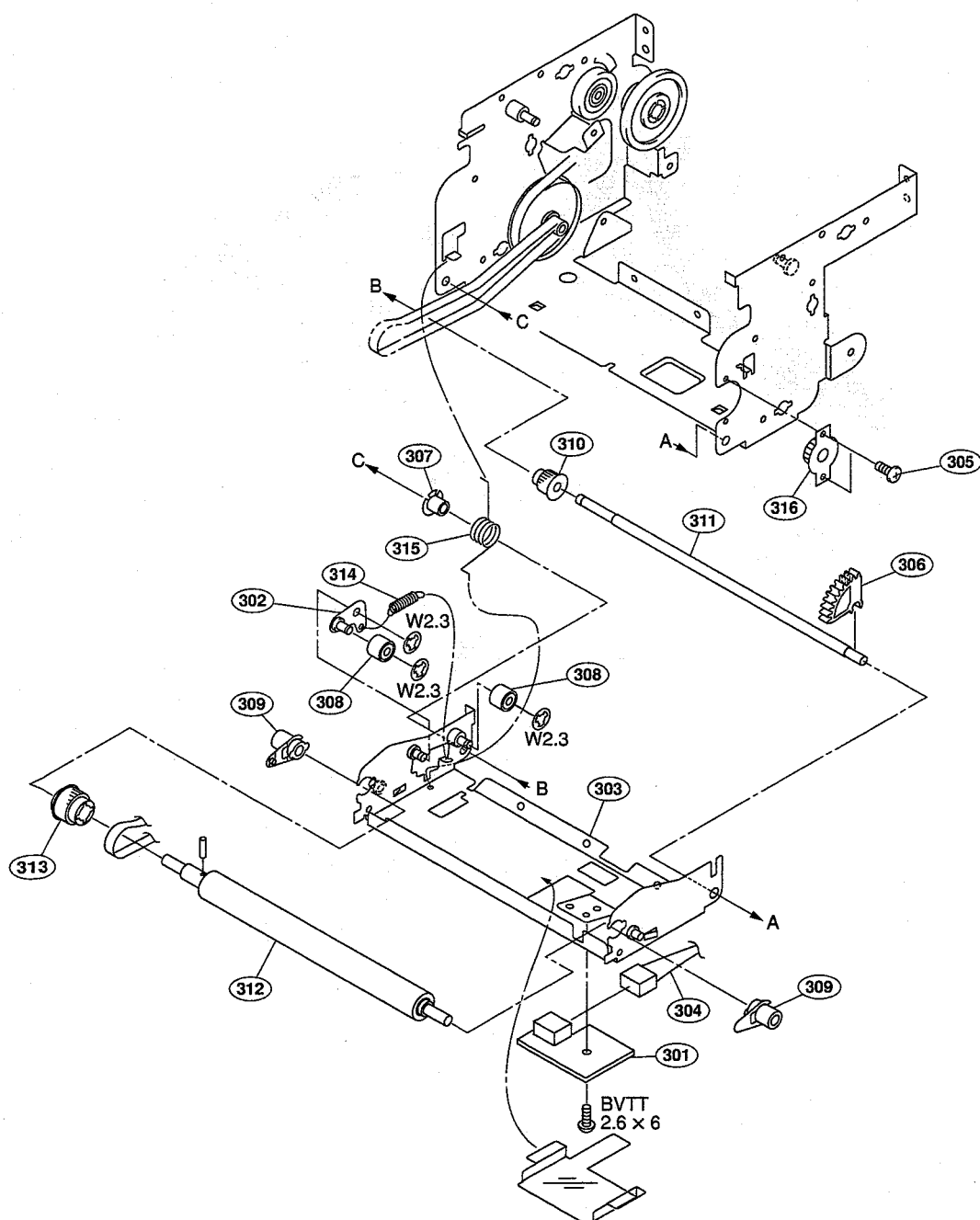
Mecha Deck Block 1



No.	Part No.	SP Description
201	A-1078-892-A	s MOUNTED CIRCUIT BOARD, SE-768
202	X-3608-983-1	s SUB ASSY, TENSION ARM
203	X-3608-987-3	s ASSY, HEAT SINK
204	X-3608-991-5	s ASSY, PAPER HOLDER
205	X-3704-803-1	s SUB ASSY, DC MOTOR (RP)
206	1-479-084-11	s HEAD, THERMAL (LVE6426SS)
207	1-787-289-11	s MOTOR, STEPPING
208	1-830-214-21	s CABLE, FLEXIBLE FLAT (26 CORE)
209	1-830-215-21	s CABLE, FLEXIBLE FLAT (28 CORE)
210	1-963-347-12	s HARNESS, MA-SE768
211	3-857-741-01	s BEARING
212	3-857-749-01	s SPRING, HEAD (10N)

No.	Part No.	SP Description
213	3-857-753-03	s CAM (L)
214	3-857-754-03	s CAM (R)
215	3-857-755-03	s GEAR, CAM
216	3-857-757-01	s ROLLER, TENSION
217	3-857-783-04	s SUPPORT (FFC)
218	3-986-503-01	s SPRING, TORSION
219	3-986-932-01	s SPRING, MOTOR TENSION (1N) S
	3-669-596-00	s WASHER, 2.3 (PLA)
	7-682-645-04	s ISO SCREW+PS3X4 CR-N (13)
	7-682-647-09	s SCREW +PS 3X6 (EP-FE/ZNBK/CM2)
	7-682-948-01	s SCREW +PSW 3X8

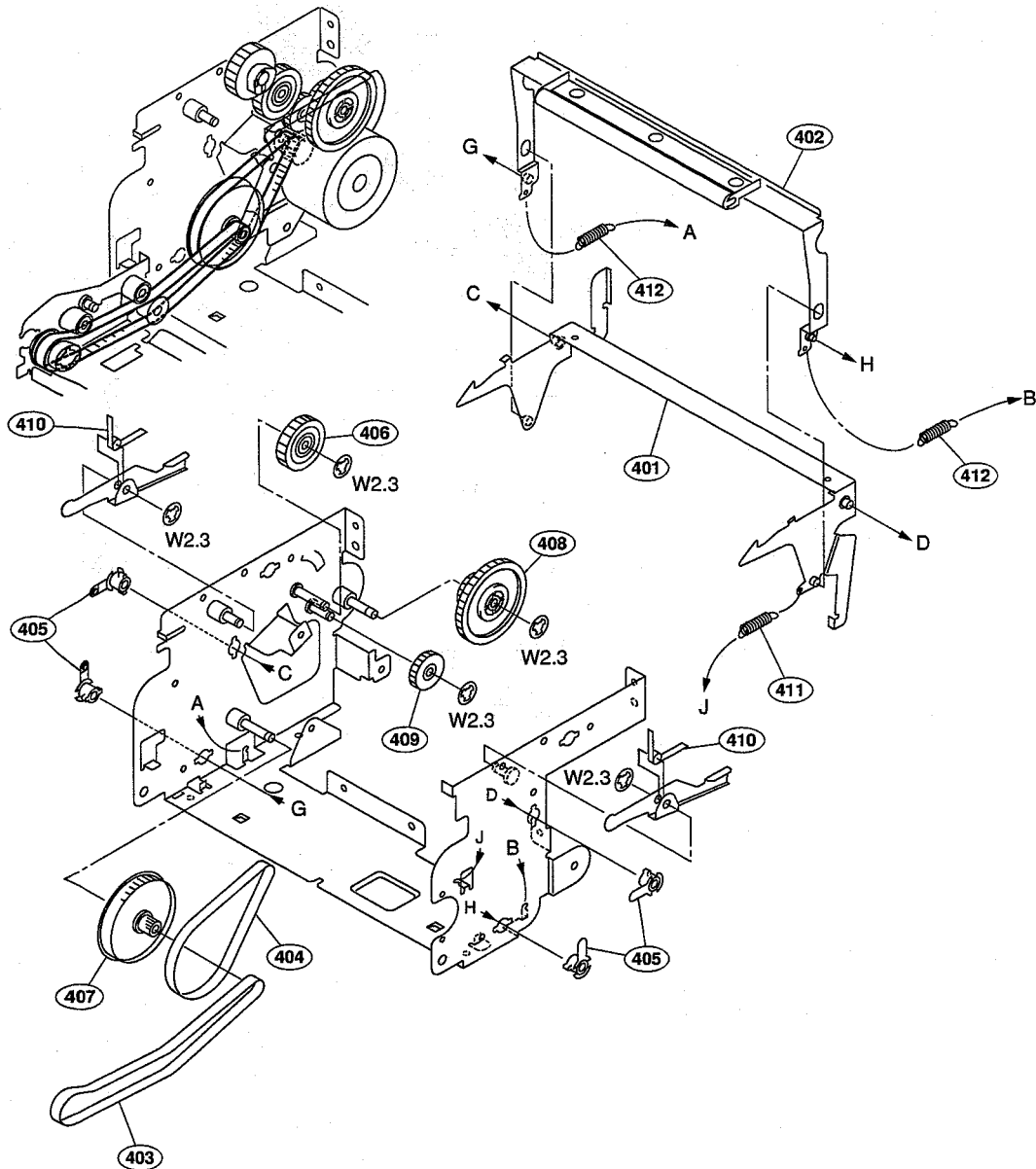
Mecha Deck Block



No.	Part No.	SP Description
301	A-1078-894-A	s MOUNTED CIRCUIT BOARD, SE-769
302	X-3608-983-1	s SUB ASSY,TENSION ARM
303	X-3608-984-1	s SUB ASSY,MD DOOR
304	1-963-348-12	s HARNESS, MA-SE769
305	3-080-203-31	s SCREW(M2X4), LOCK ACE,P2
306	3-857-743-01	s GEAR,DUMPER
307	3-857-747-01	s SPACER,FULCRUM
308	3-857-757-01	s ROLLER,TENSION
309	3-857-758-01	s BEARING,PLATEN
310	3-857-759-02	s PULLEY,FULCRUM

No.	Part No.	SP Description
311	3-857-760-01	s SHAFT,FULCRUM
312	3-857-762-01	s PLATEN
313	3-857-763-03	s PULLEY,PLATEN
314	3-857-770-01	s SPRING,DOOR EXTENSION(4N)
315	3-863-631-01	s SPRING,DOOR OPEN(C)
316	3-973-975-31	s DAMPER, OIL
	3-669-596-00	s WASHER,2.3 (PLA)
	7-685-862-09	s SCREW,+BVTT 2.6X6 (EP-FE/ZNBK/CM2)

Mecha Deck Block 3



No.	Part No.	SP Description
401	X-3608-985-1	s SUB ASSY, DOOR LOCK
402	X-3608-986-2	s SUB ASSY, PINCH ARM
403	3-854-457-01	s TIMING BELT (220TN10-5.0T)
404	3-857-739-01	s TIMING BELT (140TN10-4.0T)
405	3-857-741-01	s BEARING
406	3-857-744-01	s GEAR, IDLER
407	3-857-746-02	s PULLEY, IDLER
408	3-857-750-03	s WORM WHEEL
409	3-857-751-03	s GEAR, REDUCTION (S)
410	3-863-629-01	s LEAF SPRING (HEAD)

No.	Part No.	SP Description
411	3-986-931-01	s SPRING, LOCK (1.3N) S
412	3-990-805-01	s SPRING, PINCH (7.5N)
	3-669-596-00	s WASHER, 2.3 (PLA)
	7-685-860-09	s SCREW, +BVT 2.6X4 (EP-FE/ZNBK/CM2)

6-3. Electrical Parts List

KY-572 (D) G BOARD

Ref. No. or Q'ty	Part No.	SP Description
C101	1-162-970-11	s CAPACITOR CERAMIC 0.01MF/25V B
C102	1-162-970-11	s CAPACITOR CERAMIC 0.01MF/25V B
C103	1-162-970-11	s CAPACITOR CERAMIC 0.01MF/25V B
C105	1-162-970-11	s CAPACITOR CERAMIC 0.01MF/25V B
C106	1-162-970-11	s CAPACITOR CERAMIC 0.01MF/25V B
C107	1-162-970-11	s CAPACITOR CERAMIC 0.01MF/25V B
C108	1-165-128-11	s CAPACITOR CERAMIC 0.22MF/16V F
C109	1-165-128-11	s CAPACITOR CERAMIC 0.22MF/16V F
C110	1-165-128-11	s CAPACITOR CERAMIC 0.22MF/16V F
CN101	1-817-368-61	s CONNECTOR, FFC/FPC (ZIF) 24P
D101	6-501-137-01	s DIODE CL-375TD/SYG-D-TS
D102	8-719-064-52	s DIODE CL-191YG-CD-T
EN101	1-477-089-31	s ENCODER (ROTARY)
IC101	8-759-465-98	s IC BU9728AKV-E2
Q102	6-550-988-01	s TRANSISTOR CPT-184S-C-TS-BCD
R102	1-216-864-11	s CONDUCTOR, CHIP (1608)
R105	1-216-853-11	s RESISTOR,CHIP 470K 1/16W(1608)
R106	1-216-864-11	s CONDUCTOR, CHIP (1608)
R107	1-216-864-11	s CONDUCTOR, CHIP (1608)
R109	1-216-864-11	s CONDUCTOR, CHIP (1608)
RV101	1-227-680-12	s RESISTOR, VAR, CARBON 10K
RV102	1-227-680-12	s RESISTOR, VAR, CARBON 10K
S101	1-771-884-31	s SWITCH, TACTILE
S102	1-771-884-31	s SWITCH, TACTILE
S103	1-771-884-31	s SWITCH, TACTILE
VDR101	1-801-924-21	s VARISTOR, CHIP (1608)
VDR102	1-801-924-21	s VARISTOR, CHIP (1608)
VDR103	1-801-924-21	s VARISTOR, CHIP (1608)

MA-132 (D) G BOARD

Ref. No. or Q'ty	Part No.	SP Description
1pc	A-1159-429-A	s MOUNTED CIRCUIT BOARD, MA-132 (D)G
BZ201	1-544-886-11	s BUZZER, PIEZOELECTRIC
C101	1-125-777-11	s CAPACITOR CERAMIC 0.1MF/10V
C102	1-125-777-11	s CAPACITOR CERAMIC 0.1MF/10V
C103	1-125-777-11	s CAPACITOR CERAMIC 0.1MF/10V
C104	1-125-777-11	s CAPACITOR CERAMIC 0.1MF/10V
C105	1-164-943-11	s CAPACITOR,CHIP CERAMIC 0.01MF
C106	1-164-943-11	s CAPACITOR,CHIP CERAMIC 0.01MF
C107	1-165-989-11	s CAPACITOR, CERAMIC 10MF (2012)
C108	1-125-777-11	s CAPACITOR CERAMIC 0.1MF/10V
C110	1-165-989-11	s CAPACITOR, CERAMIC 10MF (2012)
C111	1-125-777-11	s CAPACITOR CERAMIC 0.1MF/10V
C112	1-165-989-11	s CAPACITOR, CERAMIC 10MF (2012)
C113	1-164-943-11	s CAPACITOR,CHIP CERAMIC 0.01MF
C114	1-164-943-11	s CAPACITOR,CHIP CERAMIC 0.01MF
C115	1-125-777-11	s CAPACITOR CERAMIC 0.1MF/10V
C116	1-125-777-11	s CAPACITOR CERAMIC 0.1MF/10V
C117	1-125-777-11	s CAPACITOR CERAMIC 0.1MF/10V
C118	1-125-777-11	s CAPACITOR CERAMIC 0.1MF/10V
C120	1-125-777-11	s CAPACITOR CERAMIC 0.1MF/10V
C121	1-125-777-11	s CAPACITOR CERAMIC 0.1MF/10V
C123	1-125-777-11	s CAPACITOR CERAMIC 0.1MF/10V
C124	1-164-943-11	s CAPACITOR,CHIP CERAMIC 0.01MF
C127	1-125-777-11	s CAPACITOR CERAMIC 0.1MF/10V
C128	1-164-943-11	s CAPACITOR,CHIP CERAMIC 0.01MF
C129	1-125-837-91	s CAPACITOR,CHIP CERAMIC 0.1MF/6.3V
C130	1-164-943-11	s CAPACITOR,CHIP CERAMIC 0.01MF
C132	1-164-943-11	s CAPACITOR,CHIP CERAMIC 0.01MF
C133	1-164-943-11	s CAPACITOR,CHIP CERAMIC 0.01MF
C134	1-164-943-11	s CAPACITOR,CHIP CERAMIC 0.01MF
C135	1-164-943-11	s CAPACITOR,CHIP CERAMIC 0.01MF
C136	1-164-943-11	s CAPACITOR,CHIP CERAMIC 0.01MF
C137	1-164-943-11	s CAPACITOR,CHIP CERAMIC 0.01MF
C138	1-164-943-11	s CAPACITOR,CHIP CERAMIC 0.01MF
C139	1-164-943-11	s CAPACITOR,CHIP CERAMIC 0.01MF
C140	1-164-943-11	s CAPACITOR,CHIP CERAMIC 0.01MF
C141	1-164-943-11	s CAPACITOR,CHIP CERAMIC 0.01MF
C142	1-164-943-11	s CAPACITOR,CHIP CERAMIC 0.01MF
C143	1-164-943-11	s CAPACITOR,CHIP CERAMIC 0.01MF
C144	1-164-943-11	s CAPACITOR,CHIP CERAMIC 0.01MF
C145	1-164-943-11	s CAPACITOR,CHIP CERAMIC 0.01MF
C147	1-164-943-11	s CAPACITOR,CHIP CERAMIC 0.01MF
C149	1-164-943-11	s CAPACITOR,CHIP CERAMIC 0.01MF
C150	1-164-943-11	s CAPACITOR,CHIP CERAMIC 0.01MF
C152	1-164-943-11	s CAPACITOR,CHIP CERAMIC 0.01MF
C153	1-164-943-11	s CAPACITOR,CHIP CERAMIC 0.01MF
C155	1-164-943-11	s CAPACITOR,CHIP CERAMIC 0.01MF
C156	1-164-943-11	s CAPACITOR,CHIP CERAMIC 0.01MF
C157	1-164-943-11	s CAPACITOR,CHIP CERAMIC 0.01MF
C158	1-164-943-11	s CAPACITOR,CHIP CERAMIC 0.01MF
C159	1-164-943-11	s CAPACITOR,CHIP CERAMIC 0.01MF
C160	1-164-943-11	s CAPACITOR,CHIP CERAMIC 0.01MF
C161	1-164-943-11	s CAPACITOR,CHIP CERAMIC 0.01MF
C162	1-164-943-11	s CAPACITOR,CHIP CERAMIC 0.01MF
C163	1-164-943-11	s CAPACITOR,CHIP CERAMIC 0.01MF
C164	1-164-943-11	s CAPACITOR,CHIP CERAMIC 0.01MF
C166	1-125-777-11	s CAPACITOR CERAMIC 0.1MF/10V

(MA-132 (D) G BOARD)

Ref. No. or Q'ty	Part No.	SP Description
C167	1-125-777-11	s CAPACITOR, CERAMIC 0.1MF/10V
C168	1-125-777-11	s CAPACITOR, CERAMIC 0.1MF/10V
C169	1-125-777-11	s CAPACITOR, CERAMIC 0.1MF/10V
C170	1-165-989-11	s CAPACITOR, CERAMIC 10MF (2012)
C171	1-164-847-11	s CAPACITOR, CHIP CERAMIC 7PF/50V
C172	1-164-847-11	s CAPACITOR, CHIP CERAMIC 7PF/50V
C173	1-164-844-11	s CAPACITOR, CHIP CERAMIC 4PF/50V
C175	1-125-889-11	s CAPACITOR, CERAMIC 2.2MF
C176	1-125-777-11	s CAPACITOR, CERAMIC 0.1MF/10V
C177	1-165-989-11	s CAPACITOR, CERAMIC 10MF (2012)
C178	1-164-844-11	s CAPACITOR, CHIP CERAMIC 4PF/50V
C179	1-125-777-11	s CAPACITOR, CERAMIC 0.1MF/10V
C180	1-164-943-11	s CAPACITOR, CHIP CERAMIC 0.01MF
C181	1-125-777-11	s CAPACITOR, CERAMIC 0.1MF/10V
C182	1-125-777-11	s CAPACITOR, CERAMIC 0.1MF/10V
C183	1-125-777-11	s CAPACITOR, CERAMIC 0.1MF/10V
C184	1-125-777-11	s CAPACITOR, CERAMIC 0.1MF/10V
C186	1-125-837-91	s CAPACITOR, CHIP CERAMIC 1MF/6.3V
C187	1-165-872-21	s CAPACITOR, SOLID ELECT 47MF
C188	1-165-872-21	s CAPACITOR, SOLID ELECT 47MF
C201	1-165-989-11	s CAPACITOR, CERAMIC 10MF (2012)
C202	1-125-777-11	s CAPACITOR, CERAMIC 0.1MF/10V
C203	1-125-777-11	s CAPACITOR, CERAMIC 0.1MF/10V
C204	1-164-943-11	s CAPACITOR, CHIP CERAMIC 0.01MF
C205	1-165-989-11	s CAPACITOR, CERAMIC 10MF (2012)
C206	1-125-777-11	s CAPACITOR, CERAMIC 0.1MF/10V
C207	1-165-989-11	s CAPACITOR, CERAMIC 10MF (2012)
C208	1-125-777-11	s CAPACITOR, CERAMIC 0.1MF/10V
C209	1-125-777-11	s CAPACITOR, CERAMIC 0.1MF/10V
C210	1-125-777-11	s CAPACITOR, CERAMIC 0.1MF/10V
C211	1-125-777-11	s CAPACITOR, CERAMIC 0.1MF/10V
C212	1-125-777-11	s CAPACITOR, CERAMIC 0.1MF/10V
C213	1-125-777-11	s CAPACITOR, CERAMIC 0.1MF/10V
C214	1-125-777-11	s CAPACITOR, CERAMIC 0.1MF/10V
C215	1-125-777-11	s CAPACITOR, CERAMIC 0.1MF/10V
C216	1-125-777-11	s CAPACITOR, CERAMIC 0.1MF/10V
C217	1-125-777-11	s CAPACITOR, CERAMIC 0.1MF/10V
C218	1-125-777-11	s CAPACITOR, CERAMIC 0.1MF/10V
C219	1-125-777-11	s CAPACITOR, CERAMIC 0.1MF/10V
C220	1-125-777-11	s CAPACITOR, CERAMIC 0.1MF/10V
C223	1-125-777-11	s CAPACITOR, CERAMIC 0.1MF/10V
C224	1-125-777-11	s CAPACITOR, CERAMIC 0.1MF/10V
C225	1-125-777-11	s CAPACITOR, CERAMIC 0.1MF/10V
C226	1-125-777-11	s CAPACITOR, CERAMIC 0.1MF/10V
C227	1-107-826-11	s CAPACITOR, CHIP CERAMIC 0.1MF
C231	1-125-777-11	s CAPACITOR, CERAMIC 0.1MF/10V
C232	1-125-777-11	s CAPACITOR, CERAMIC 0.1MF/10V
C233	1-125-777-11	s CAPACITOR, CERAMIC 0.1MF/10V
C235	1-125-777-11	s CAPACITOR, CERAMIC 0.1MF/10V
C237	1-125-777-11	s CAPACITOR, CERAMIC 0.1MF/10V
C238	1-125-777-11	s CAPACITOR, CERAMIC 0.1MF/10V
C239	1-125-891-11	s CAPACITOR, CERAMIC 0.47MF/10V
C240	1-125-777-11	s CAPACITOR, CERAMIC 0.1MF/10V
C241	1-125-891-11	s CAPACITOR, CERAMIC 0.47MF/10V
C245	1-165-989-11	s CAPACITOR, CERAMIC 10MF (2012)
C246	1-125-777-11	s CAPACITOR, CERAMIC 0.1MF/10V
C247	1-125-837-91	s CAPACITOR, CHIP CERAMIC 1MF/6.3V
C248	1-107-826-11	s CAPACITOR, CHIP CERAMIC 0.1MF
C249	1-125-777-11	s CAPACITOR, CERAMIC 0.1MF/10V

(MA-132 (D) G BOARD)

Ref. No. or Q'ty	Part No.	SP Description
C250	1-165-870-21	s CAPACITOR, ELECT 100MF (6.3X6)
C251	1-125-777-11	s CAPACITOR, CERAMIC 0.1MF/10V
C252	1-164-866-11	s CAPACITOR, CHIP CERAMIC 47PF/50
C253	1-107-826-11	s CAPACITOR, CHIP CERAMIC 0.1MF
C254	1-164-866-11	s CAPACITOR, CHIP CERAMIC 47PF/50
C255	1-125-777-11	s CAPACITOR, CERAMIC 0.1MF/10V
C256	1-125-777-11	s CAPACITOR, CERAMIC 0.1MF/10V
C257	1-125-777-11	s CAPACITOR, CERAMIC 0.1MF/10V
C258	1-125-777-11	s CAPACITOR, CERAMIC 0.1MF/10V
C259	1-164-866-11	s CAPACITOR, CHIP CERAMIC 47PF/50
C260	1-125-777-11	s CAPACITOR, CERAMIC 0.1MF/10V
C261	1-125-777-11	s CAPACITOR, CERAMIC 0.1MF/10V
C262	1-125-777-11	s CAPACITOR, CERAMIC 0.1MF/10V
C263	1-125-777-11	s CAPACITOR, CERAMIC 0.1MF/10V
C264	1-125-777-11	s CAPACITOR, CERAMIC 0.1MF/10V
C265	1-125-777-11	s CAPACITOR, CERAMIC 0.1MF/10V
C266	1-107-826-11	s CAPACITOR, CHIP CERAMIC 0.1MF
C267	1-107-826-11	s CAPACITOR, CHIP CERAMIC 0.1MF
C268	1-107-826-11	s CAPACITOR, CHIP CERAMIC 0.1MF
C269	1-107-826-11	s CAPACITOR, CHIP CERAMIC 0.1MF
C270	1-107-826-11	s CAPACITOR, CHIP CERAMIC 0.1MF
C271	1-107-826-11	s CAPACITOR, CHIP CERAMIC 0.1MF
C272	1-125-837-91	s CAPACITOR, CHIP CERAMIC 1MF/6.3V
C273	1-165-872-21	s CAPACITOR, SOLID ELECT 47MF
C274	1-125-777-11	s CAPACITOR, CERAMIC 0.1MF/10V
C275	1-125-777-11	s CAPACITOR, CERAMIC 0.1MF/10V
C276	1-125-777-11	s CAPACITOR, CERAMIC 0.1MF/10V
C277	1-125-777-11	s CAPACITOR, CERAMIC 0.1MF/10V
C278	1-125-777-11	s CAPACITOR, CERAMIC 0.1MF/10V
C279	1-164-858-11	s CAPACITOR, CERAMIC 22PF/50V
C280	1-164-858-11	s CAPACITOR, CERAMIC 22PF/50V
C281	1-164-858-11	s CAPACITOR, CERAMIC 22PF/50V
C282	1-164-866-11	s CAPACITOR, CHIP CERAMIC 47PF/50
C283	1-164-866-11	s CAPACITOR, CHIP CERAMIC 47PF/50
C284	1-164-866-11	s CAPACITOR, CHIP CERAMIC 47PF/50
C285	1-164-866-11	s CAPACITOR, CHIP CERAMIC 47PF/50
C286	1-164-866-11	s CAPACITOR, CHIP CERAMIC 47PF/50
C287	1-164-866-11	s CAPACITOR, CHIP CERAMIC 47PF/50
C288	1-164-866-11	s CAPACITOR, CHIP CERAMIC 47PF/50
C289	1-164-866-11	s CAPACITOR, CHIP CERAMIC 47PF/50
C290	1-164-866-11	s CAPACITOR, CHIP CERAMIC 47PF/50
C291	1-164-866-11	s CAPACITOR, CHIP CERAMIC 47PF/50
C292	1-164-866-11	s CAPACITOR, CHIP CERAMIC 47PF/50
C293	1-164-866-11	s CAPACITOR, CHIP CERAMIC 47PF/50
C294	1-164-866-11	s CAPACITOR, CHIP CERAMIC 47PF/50
C295	1-164-866-11	s CAPACITOR, CHIP CERAMIC 47PF/50
C296	1-164-866-11	s CAPACITOR, CHIP CERAMIC 47PF/50
C297	1-164-866-11	s CAPACITOR, CHIP CERAMIC 47PF/50
C298	1-164-866-11	s CAPACITOR, CHIP CERAMIC 47PF/50
C299	1-164-866-11	s CAPACITOR, CHIP CERAMIC 47PF/50
C300	1-125-777-11	s CAPACITOR, CERAMIC 0.1MF/10V
C301	1-165-870-21	s CAPACITOR, ELECT 100MF (6.3X6)
C302	1-107-826-11	s CAPACITOR, CHIP CERAMIC 0.1MF
C303	1-127-715-11	s CAPACITOR, CERAMIC 0.22MF B1608
C308	1-115-339-11	s CAPACITOR, CERAMIC 0.1MF/50V
C311	1-107-826-11	s CAPACITOR, CHIP CERAMIC 0.1MF
C312	1-165-870-21	s CAPACITOR, ELECT 100MF (6.3X6)
C314	1-165-989-11	s CAPACITOR, CERAMIC 10MF (2012)
C315	1-125-777-11	s CAPACITOR, CERAMIC 0.1MF/10V

(MA-132(D) G BOARD)

Ref. No. or Q'ty	Part No.	SP Description
C316	1-107-826-11	s CAPACITOR,CHIP CERAMIC 0.1MF
C317	1-165-870-21	s CAPACITOR, ELECT 100MF (6.3X6)
C320	1-165-989-11	s CAPACITOR, CERAMIC 10MF (2012)
C321	1-125-777-11	s CAPACITOR CERAMIC 0.1MF/10V
C322	1-107-826-11	s CAPACITOR,CHIP CERAMIC 0.1MF
C323	1-100-165-21	s CAP, ELECT 47MF (8X7)
C324	1-127-715-11	s CAPACITOR, CERAMIC 0.22MF B1608
C325	1-127-715-11	s CAPACITOR, CERAMIC 0.22MF B1608
C401	1-164-943-11	s CAPACITOR,CHIP CERAMIC 0.01MF
C402	1-125-777-11	s CAPACITOR CERAMIC 0.1MF/10V
C403	1-164-858-11	s CAPACITOR, CERAMIC 22PF/50V
C404	1-164-943-11	s CAPACITOR,CHIP CERAMIC 0.01MF
C405	1-125-777-11	s CAPACITOR CERAMIC 0.1MF/10V
C406	1-165-872-21	s CAPACITOR, SOLID ELECT 47MF
C407	1-164-943-11	s CAPACITOR,CHIP CERAMIC 0.01MF
C408	1-125-777-11	s CAPACITOR CERAMIC 0.1MF/10V
C409	1-164-943-11	s CAPACITOR,CHIP CERAMIC 0.01MF
C410	1-125-777-11	s CAPACITOR CERAMIC 0.1MF/10V
C411	1-164-943-11	s CAPACITOR,CHIP CERAMIC 0.01MF
C412	1-125-777-11	s CAPACITOR CERAMIC 0.1MF/10V
C413	1-164-943-11	s CAPACITOR,CHIP CERAMIC 0.01MF
C414	1-125-777-11	s CAPACITOR CERAMIC 0.1MF/10V
C415	1-164-943-11	s CAPACITOR,CHIP CERAMIC 0.01MF
C416	1-125-777-11	s CAPACITOR CERAMIC 0.1MF/10V
C417	1-164-943-11	s CAPACITOR,CHIP CERAMIC 0.01MF
C418	1-125-777-11	s CAPACITOR CERAMIC 0.1MF/10V
C419	1-164-943-11	s CAPACITOR,CHIP CERAMIC 0.01MF
C420	1-125-777-11	s CAPACITOR CERAMIC 0.1MF/10V
C421	1-126-394-11	s CAPACITOR, ELECT 10MF/16V(CHIP)
C422	1-125-777-11	s CAPACITOR CERAMIC 0.1MF/10V
C423	1-165-989-11	s CAPACITOR, CERAMIC 10MF (2012)
C424	1-165-989-11	s CAPACITOR, CERAMIC 10MF (2012)
C425	1-164-943-11	s CAPACITOR,CHIP CERAMIC 0.01MF
C426	1-164-943-11	s CAPACITOR,CHIP CERAMIC 0.01MF
C427	1-125-777-11	s CAPACITOR CERAMIC 0.1MF/10V
C428	1-164-943-11	s CAPACITOR,CHIP CERAMIC 0.01MF
C429	1-125-777-11	s CAPACITOR CERAMIC 0.1MF/10V
C430	1-164-943-11	s CAPACITOR,CHIP CERAMIC 0.01MF
C431	1-125-777-11	s CAPACITOR CERAMIC 0.1MF/10V
C432	1-165-989-11	s CAPACITOR, CERAMIC 10MF (2012)
C601	1-107-826-11	s CAPACITOR,CHIP CERAMIC 0.1MF
C2003	1-165-128-11	s CAPACITOR CERAMIC 0.22MF/16V F
C2004	1-165-128-11	s CAPACITOR CERAMIC 0.22MF/16V F
C2005	1-107-826-11	s CAPACITOR,CHIP CERAMIC 0.1MF
C2006	1-125-777-11	s CAPACITOR CERAMIC 0.1MF/10V
CN102	1-784-254-11	s CONNECTOR 10P
CN201	1-779-336-61	s CONNECTOR, FFC/FPC 24P
CN204	1-766-376-11	o PIN, CONNECTOR (1.5MM) (SMD) 9P
CN206	1-784-877-11	s CONNECTOR, FFC (LIF (NON-ZIF)) 28P
CN302	1-784-876-21	s CONNECTOR, FFC (LIF (NON-ZIF)) 26P
CN401	1-779-328-61	s CONNECTOR, FFC/FPC 8P
CN402	1-815-194-11	s CONNECTOR, USB (B)
D201	8-719-421-67	s DIODE MA132WK
D202	8-719-820-41	s DIODE 1SS302
D204	8-719-820-41	s DIODE 1SS302
D205	8-719-820-41	s DIODE 1SS302
D206	8-719-820-41	s DIODE 1SS302
D207	8-719-820-41	s DIODE 1SS302

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Ref. No. or Q'ty	Part No.	SP Description
D208	8-719-820-41	s DIODE 1SS302
D209	8-719-820-41	s DIODE 1SS302
D210	8-719-820-41	s DIODE 1SS302
D211	8-719-820-41	s DIODE 1SS302
D212	8-719-820-41	s DIODE 1SS302
D302	8-719-066-98	s DIODE RB051L-40
D401	8-719-421-67	s DIODE MA132WK
D402	6-500-701-01	s DIODE PGB0010603NR
D403	6-500-701-01	s DIODE PGB0010603NR
D601	8-719-210-33	s DIODE EC10DS2 (RECTI)
D602	8-719-104-34	s DIODE 1S2836
D603	8-719-104-34	s DIODE 1S2836
D604	8-719-104-34	s DIODE 1S2836
D605	8-719-104-34	s DIODE 1S2836
D606	8-719-104-34	s DIODE 1S2836
D607	8-719-104-34	s DIODE 1S2836
F601	△ 1-576-212-21	s FUSE CHIP 1.25A (6125)
FB101	1-414-445-11	s FERRITE, EMI (SMD)
FB102	1-414-445-11	s FERRITE, EMI (SMD)
FB105	1-414-813-11	s MICRO INDUCTOR(CHIP TYPE) 2012
FB201	1-414-813-11	s MICRO INDUCTOR(CHIP TYPE) 2012
FB202	1-414-813-11	s MICRO INDUCTOR(CHIP TYPE) 2012
FB203	1-414-760-21	s INDUCTOR, MICRO (CHIP TYPE)
FB204	1-414-760-21	s INDUCTOR, MICRO (CHIP TYPE)
FB205	1-414-760-21	s INDUCTOR, MICRO (CHIP TYPE)
FB206	1-414-760-21	s INDUCTOR, MICRO (CHIP TYPE)
FB207	1-414-760-21	s INDUCTOR, MICRO (CHIP TYPE)
FB208	1-414-760-21	s INDUCTOR, MICRO (CHIP TYPE)
FB209	1-414-760-21	s INDUCTOR, MICRO (CHIP TYPE)
FB210	1-414-760-21	s INDUCTOR, MICRO (CHIP TYPE)
FB211	1-414-760-21	s INDUCTOR, MICRO (CHIP TYPE)
FB212	1-414-760-21	s INDUCTOR, MICRO (CHIP TYPE)
FB213	1-414-760-21	s INDUCTOR, MICRO (CHIP TYPE)
FB214	1-414-760-21	s INDUCTOR, MICRO (CHIP TYPE)
FB215	1-414-760-21	s INDUCTOR, MICRO (CHIP TYPE)
FB216	1-414-760-21	s INDUCTOR, MICRO (CHIP TYPE)
FB217	1-414-760-21	s INDUCTOR, MICRO (CHIP TYPE)
FB218	1-414-760-21	s INDUCTOR, MICRO (CHIP TYPE)
FB220	1-414-760-21	s INDUCTOR, MICRO (CHIP TYPE)
FB221	1-414-760-21	s INDUCTOR, MICRO (CHIP TYPE)
FB222	1-414-760-21	s INDUCTOR, MICRO (CHIP TYPE)
FB223	1-414-760-21	s INDUCTOR, MICRO (CHIP TYPE)
FB224	1-414-760-21	s INDUCTOR, MICRO (CHIP TYPE)
FB225	1-414-760-21	s INDUCTOR, MICRO (CHIP TYPE)
FB226	1-414-760-21	s INDUCTOR, MICRO (CHIP TYPE)
FB227	1-414-760-21	s INDUCTOR, MICRO (CHIP TYPE)
FB228	1-414-813-11	s MICRO INDUCTOR(CHIP TYPE) 2012
FB252	1-414-760-21	s INDUCTOR, MICRO (CHIP TYPE)
FB253	1-414-813-11	s MICRO INDUCTOR(CHIP TYPE) 2012
FB254	1-414-813-11	s MICRO INDUCTOR(CHIP TYPE) 2012
FB255	1-414-760-21	s INDUCTOR, MICRO (CHIP TYPE)
FB256	1-414-760-21	s INDUCTOR, MICRO (CHIP TYPE)
FB257	1-414-760-21	s INDUCTOR, MICRO (CHIP TYPE)
FB401	1-469-324-21	s FERRITE, EMI (SMD) 4.7UH
FB405	1-469-324-21	s FERRITE, EMI (SMD) 4.7UH
FL401	1-234-494-21	s FILTER, EMI REMOVAL (SMD)

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Ref. No. or Q'ty	Part No.	SP Description
IC101	6-708-493-01	s IC HY57V281620ETP-HDR
IC102	6-708-493-01	s IC HY57V281620ETP-HDR
IC103	6-708-163-01	s IC S29AL016D70BFI020
IC105	6-702-688-01	s IC M24C64-WMN6T(B)
IC106	8-759-649-45	o IC SN74AHC1G04DCKR
IC107	6-705-771-01	s IC SN74LVC1G32DCKR
IC109	6-706-712-01	s IC BD45401G
IC110	6-703-671-01	o IC BR9040F-WE2
IC201	6-705-868-01	s IC XC2173S01XMR
IC203	6-705-771-01	s IC SN74LVC1G32DCKR
IC204	8-759-549-23	s IC SN74LV74APWR
IC205	8-759-277-63	s IC TC7W14FU (TE12R)
IC206	8-759-337-40	s IC NJM2904V (TE2)
IC207	8-759-669-48	s IC LM324PWR-12
IC208	8-759-564-49	s IC TC7W53FU-TE12R
IC209	6-706-704-01	s IC TLV3402IDGKR
IC301	6-700-394-01	s IC BA25BC0FP-TE2
IC302	6-706-191-01	s IC BD9701FP-E2
IC304	6-705-879-01	s IC XC62EP1602MR
IC401	6-702-628-01	s IC UPD720122F1-DN1-E2-A
IC601	8-759-549-20	s IC SN74LV541APWR
JC103	1-216-864-11	s CONDUCTOR, CHIP (1608)
JC104	1-216-864-11	s CONDUCTOR, CHIP (1608)
JC105	1-216-864-11	s CONDUCTOR, CHIP (1608)
JC201	1-216-864-11	s CONDUCTOR, CHIP (1608)
L305	1-469-828-11	s INDUCTOR 100UH
L306	1-424-653-11	s COIL, CHOKE 10UH
L307	1-424-653-11	s COIL, CHOKE 10UH
L401	1-400-284-21	s COIL, COMMON MODE CHOKE
Q102	8-729-028-73	s TRANSISTOR DTA114EUA-T106
Q103	8-729-120-28	s TRANSISTOR 2SC1623-L5L6
Q203	8-729-928-81	s TRANSISTOR DTC144EE
Q204	8-729-928-90	s TRANSISTOR DTC114EE
Q205	8-729-928-90	s TRANSISTOR DTC114EE
Q206	6-550-139-01	s TRANSISTOR IMZ1A-T108
Q208	8-729-928-81	s TRANSISTOR DTC144EE
Q210	8-729-928-81	s TRANSISTOR DTC144EE
Q211	8-729-928-81	s TRANSISTOR DTC144EE
Q301	6-550-139-01	s TRANSISTOR IMZ1A-T108
Q302	8-729-053-92	s TRANSISTOR 2SB1424-T100-QR
Q401	8-729-928-90	s TRANSISTOR DTC114EE
Q402	8-729-230-27	s TRANSISTOR 2SA1213Y-TE12L
Q601	8-729-140-75	s TRANSISTOR 2SD999-CLOCK
Q602	8-729-017-80	s TRANSISTOR 2SD992-Z
Q603	8-729-017-80	s TRANSISTOR 2SD992-Z
Q604	8-729-017-80	s TRANSISTOR 2SD992-Z
Q605	8-729-017-80	s TRANSISTOR 2SD992-Z
Q606	8-729-017-80	s TRANSISTOR 2SD992-Z
Q607	8-729-140-75	s TRANSISTOR 2SD999-CLOCK
Q608	8-729-017-80	s TRANSISTOR 2SD992-Z
R19	1-414-760-21	s INDUCTOR, MICRO (CHIP TYPE)
R20	1-414-760-21	s INDUCTOR, MICRO (CHIP TYPE)
R101	1-218-965-11	s RESISTOR, CHIP 10K 1/16W
R102	1-218-965-11	s RESISTOR, CHIP 10K 1/16W
R103	1-218-965-11	s RESISTOR, CHIP 10K 1/16W
R104	1-208-643-11	s RESISTOR CHIP 22 1/16W (1005)
R105	1-208-643-11	s RESISTOR CHIP 22 1/16W (1005)

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Ref. No. or Q'ty	Part No.	SP Description
R106	1-208-643-11	s RESISTOR CHIP 22 1/16W (1005)
R107	1-208-643-11	s RESISTOR CHIP 22 1/16W (1005)
R108	1-208-643-11	s RESISTOR CHIP 22 1/16W (1005)
R109	1-208-643-11	s RESISTOR CHIP 22 1/16W (1005)
R115	1-220-880-11	s RESISTOR, CHIP 27 (1005)
R116	1-218-965-11	s RESISTOR, CHIP 10K 1/16W
R118	1-220-880-11	s RESISTOR, CHIP 27 (1005)
R121	1-218-955-11	s RESISTOR, CHIP 1.5K
R125	1-216-864-11	s CONDUCTOR, CHIP (1608)
R126	1-208-643-11	s RESISTOR CHIP 22 1/16W (1005)
R127	1-208-643-11	s RESISTOR CHIP 22 1/16W (1005)
R128	1-208-643-11	s RESISTOR CHIP 22 1/16W (1005)
R129	1-208-643-11	s RESISTOR CHIP 22 1/16W (1005)
R130	1-208-643-11	s RESISTOR CHIP 22 1/16W (1005)
R131	1-218-953-11	s RESISTOR, CHIP 1K 1/16W
R132	1-218-941-81	s RESISTOR, CHIP 100, 1/16W (1005)
R133	1-208-643-11	s RESISTOR CHIP 22 1/16W (1005)
R134	1-218-953-11	s RESISTOR, CHIP 1K 1/16W
R135	1-216-833-11	s RESISTOR, CHIP 10K 1/10W (1608)
R136	1-208-688-11	s RESISTOR, CHIP 1.6K1/16W 1005
R137	1-208-688-11	s RESISTOR, CHIP 1.6K1/16W 1005
R138	1-208-688-11	s RESISTOR, CHIP 1.6K1/16W 1005
R139	1-208-697-11	s RESISTOR CHIP 3.9K 1/16W (1005)
R140	1-218-990-11	s RESISTOR, CHIP 0 1/16W (1005)
R143	1-218-989-11	s RESISTOR, CHIP 1M 1/16W (1005)
R144	1-218-945-11	s RESISTOR, CHIP 220 1/16W (1005)
R145	1-218-969-11	s RESISTOR, CHIP 22K 1/16W (1005)
R146	1-216-833-11	s RESISTOR, CHIP 10K 1/10W (1608)
R147	1-218-990-11	s RESISTOR, CHIP 0 1/16W (1005)
R148	1-218-990-11	s RESISTOR, CHIP 0 1/16W (1005)
R149	1-216-809-11	s RESISTOR, CHIP 100 1/10W 1608
R150	1-218-953-11	s RESISTOR, CHIP 1K 1/16W
R152	1-216-864-11	s CONDUCTOR, CHIP (1608)
R153	1-218-965-11	s RESISTOR, CHIP 10K 1/16W
R154	1-218-965-11	s RESISTOR, CHIP 10K 1/16W
R155	1-218-965-11	s RESISTOR, CHIP 10K 1/16W
R156	1-218-965-11	s RESISTOR, CHIP 10K 1/16W
R157	1-218-965-11	s RESISTOR, CHIP 10K 1/16W
R158	1-218-965-11	s RESISTOR, CHIP 10K 1/16W
R159	1-216-845-11	s RESISTOR, CHIP 100K 1/10W (1608)
R161	1-218-941-81	s RESISTOR, CHIP 100, 1/16W (1005)
R162	1-218-941-81	s RESISTOR, CHIP 100, 1/16W (1005)
R163	1-216-849-11	s RESISTOR, CHIP 220K 1/16W 1608
R164	1-218-875-11	s RESISTOR, CHIP 15K 1/10W (1608)
R165	1-218-875-11	s RESISTOR, CHIP 15K 1/10W (1608)
R166	1-218-941-81	s RESISTOR, CHIP 100, 1/16W (1005)
R168	1-218-965-11	s RESISTOR, CHIP 10K 1/16W
R169	1-208-687-11	s RESISTOR CHIP 1.5K 1/16W (1005)
R170	1-218-990-11	s RESISTOR, CHIP 0 1/16W (1005)
R172	1-218-990-11	s RESISTOR, CHIP 0 1/16W (1005)
R173	1-218-941-11	s RESISTOR, CHIP 100 1/16W (1005)
R174	1-218-941-11	s RESISTOR, CHIP 100 1/16W (1005)
R177	1-220-174-11	s RESISTOR, CHIP 200 1/16W (1005)
R199	1-216-829-11	s RESISTOR, CHIP 4.7K 1/10W (1608)
R201	1-218-955-11	s RESISTOR, CHIP 1.5K
R202	1-218-955-11	s RESISTOR, CHIP 1.5K
R203	1-218-894-11	s RESISTOR, CHIP 91K 1/10W (1608)
R204	1-218-856-11	s RESISTOR, CHIP 2.4K 1/10W (1608)
R205	1-218-889-11	s RESISTOR, CHIP 56K 1/10W (1608)

(MA-132(D)G BOARD)

Ref. No. or Q'ty	Part No.	SP	Description
R206	1-218-887-11	s	RESISTOR,CHIP 47K 1/10W (1608)
R207	1-218-937-11	s	RESISTOR, CHIP 47
R208	1-218-990-11	s	RESISTOR,CHIP 0 1/16W (1005)
R209	1-218-941-81	s	RESISTOR,CHIP 100,1/16W (1005)
R210	1-218-941-81	s	RESISTOR,CHIP 100,1/16W (1005)
R211	1-218-941-81	s	RESISTOR,CHIP 100,1/16W (1005)
R212	1-218-941-81	s	RESISTOR,CHIP 100,1/16W (1005)
R213	1-218-941-81	s	RESISTOR,CHIP 100,1/16W (1005)
R214	1-218-965-11	s	RESISTOR, CHIP 10K 1/16W
R215	1-218-965-11	s	RESISTOR, CHIP 10K 1/16W
R216	1-218-941-81	s	RESISTOR,CHIP 100,1/16W (1005)
R217	1-218-990-11	s	RESISTOR,CHIP 0 1/16W (1005)
R218	1-216-833-11	s	RESISTOR,CHIP 10K 1/10W (1608)
R219	1-216-833-11	s	RESISTOR,CHIP 10K 1/10W (1608)
R220	1-216-801-11	s	RESISTOR,CHIP 22 1/10W (1608)
R221	1-218-941-81	s	RESISTOR,CHIP 100,1/16W (1005)
R222	1-218-941-81	s	RESISTOR,CHIP 100,1/16W (1005)
R223	1-218-941-81	s	RESISTOR,CHIP 100,1/16W (1005)
R224	1-218-941-81	s	RESISTOR,CHIP 100,1/16W (1005)
R225	1-216-813-11	s	RESISTOR, CHIP 220 1/10W 1608
R226	1-216-817-11	s	RESISTOR,CHIP 470 1/10W 1608
R227	1-218-965-11	s	RESISTOR, CHIP 10K 1/16W
R228	1-218-955-11	s	RESISTOR, CHIP 1.5K
R229	1-216-864-11	s	CONDUCTOR, CHIP (1608)
R231	1-208-683-11	s	RESISTOR CHIP 1K 1/16W (1005)
R232	1-208-855-81	s	RESISTOR,CHIP 47 1/16W (1005)
R233	1-208-715-11	s	RESISTOR,CHIP 22K 1/16W (1005)
R235	1-218-945-11	s	RESISTOR,CHIP 220 1/16W(1005)
R236	1-218-892-11	s	RESISTOR,CHIP 75K 1/10W (1608)
R237	1-218-887-11	s	RESISTOR,CHIP 47K 1/10W (1608)
R238	1-218-895-11	s	RESISTOR,CHIP 100K 1/10W(1608)
R239	1-218-965-11	s	RESISTOR, CHIP 10K 1/16W
R240	1-216-833-11	s	RESISTOR,CHIP 10K 1/10W (1608)
R241	1-216-833-11	s	RESISTOR,CHIP 10K 1/10W (1608)
R244	1-218-861-11	s	RESISTOR,CHIP 3.9K 1/10W(1608)
R245	1-218-973-11	s	RESISTOR,CHIP 47K 1/16W (1005)
R246	1-218-969-11	s	RESISTOR,CHIP 22K 1/16W (1005)
R247	1-218-969-11	s	RESISTOR,CHIP 22K 1/16W (1005)
R249	1-208-709-11	s	RESISTOR CHIP 12K 1/16W (1005)
R250	1-216-813-11	s	RESISTOR, CHIP 220 1/10W 1608
R251	1-216-833-11	s	RESISTOR,CHIP 10K 1/10W (1608)
R252	1-216-833-11	s	RESISTOR,CHIP 10K 1/10W (1608)
R253	1-216-841-11	s	RESISTOR, CHIP 47K 1/10W 1608
R254	1-216-864-11	s	CONDUCTOR, CHIP (1608)
R255	1-216-864-11	s	CONDUCTOR, CHIP (1608)
R256	1-216-833-11	s	RESISTOR,CHIP 10K 1/10W (1608)
R258	1-218-965-11	s	RESISTOR, CHIP 10K 1/16W
R260	1-218-965-11	s	RESISTOR, CHIP 10K 1/16W
R261	1-218-965-11	s	RESISTOR, CHIP 10K 1/16W
R262	1-218-965-11	s	RESISTOR, CHIP 10K 1/16W
R263	1-218-965-11	s	RESISTOR, CHIP 10K 1/16W
R264	1-216-864-11	s	CONDUCTOR, CHIP (1608)
R266	1-216-864-11	s	CONDUCTOR, CHIP (1608)
R268	1-216-864-11	s	CONDUCTOR, CHIP (1608)
R273	1-216-864-11	s	CONDUCTOR, CHIP (1608)
R274	1-218-887-11	s	RESISTOR,CHIP 47K 1/10W (1608)
R275	1-216-864-11	s	CONDUCTOR, CHIP (1608)
R278	1-218-965-11	s	RESISTOR, CHIP 10K 1/16W
R279	1-208-643-11	s	RESISTOR CHIP 22 1/16W (1005)

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Ref. No. or Q'ty	Part No.	SP	Description
R281	1-216-864-11	s	CONDUCTOR, CHIP (1608)
R282	1-216-864-11	s	CONDUCTOR, CHIP (1608)
R284	1-218-941-81	s	RESISTOR,CHIP 100,1/16W (1005)
R302	1-219-365-11	s	RESISTOR,CHIP
R307	1-216-821-11	s	RESISTOR,CHIP 1.0K 1/10W(1608)
R308	1-216-829-11	s	RESISTOR,CHIP 4.7K 1/10W(1608)
R309	1-242-967-11	s	RESISTOR, CHIP 1.0 (1005)
R310	1-242-967-11	s	RESISTOR, CHIP 1.0 (1005)
R311	1-218-941-81	s	RESISTOR,CHIP 100,1/16W (1005)
R312	1-242-967-11	s	RESISTOR, CHIP 1.0 (1005)
R313	1-242-967-11	s	RESISTOR, CHIP 1.0 (1005)
R314	1-218-869-11	s	RESISTOR,CHIP 8.2K 1/10W(1608)
R315	1-218-859-11	s	RESISTOR,CHIP 3.3K 1/10W(1608)
R318	1-216-829-11	s	RESISTOR,CHIP 4.7K 1/10W(1608)
R319	1-216-825-11	s	RESISTOR,CHIP 2.2K 1/10W 1608
R320	1-242-967-11	s	RESISTOR, CHIP 1.0 (1005)
R321	1-242-967-11	s	RESISTOR, CHIP 1.0 (1005)
R401	1-218-990-11	s	RESISTOR,CHIP 0 1/16W (1005)
R402	1-208-911-11	s	RESISTOR, CHIP 10K (1005)
R403	1-208-911-11	s	RESISTOR, CHIP 10K (1005)
R404	1-208-911-11	s	RESISTOR, CHIP 10K (1005)
R405	1-208-911-11	s	RESISTOR, CHIP 10K (1005)
R406	1-208-911-11	s	RESISTOR, CHIP 10K (1005)
R407	1-208-911-11	s	RESISTOR, CHIP 10K (1005)
R408	1-208-911-11	s	RESISTOR, CHIP 10K (1005)
R409	1-208-911-11	s	RESISTOR, CHIP 10K (1005)
R410	1-208-675-11	s	RESISTOR CHIP 470 1/16W (1005)
R411	1-208-911-11	s	RESISTOR, CHIP 10K (1005)
R412	1-208-911-11	s	RESISTOR, CHIP 10K (1005)
R413	1-208-911-11	s	RESISTOR, CHIP 10K (1005)
R414	1-208-911-11	s	RESISTOR, CHIP 10K (1005)
R415	1-208-699-11	s	RESISTOR,CHIP 4.7K 1/16W(1005)
R416	1-208-911-11	s	RESISTOR, CHIP 10K (1005)
R417	1-208-855-81	s	RESISTOR,CHIP 47 1/16W (1005)
R418	1-216-817-11	s	RESISTOR,CHIP 470 1/10W 1608
R419	1-208-927-11	s	RESISTOR, CHIP 47K 1/16W(1005)
R420	1-216-790-11	s	RESISTOR,CHIP 2.7 1/10W (1608)
R421	1-216-790-11	s	RESISTOR,CHIP 2.7 1/10W (1608)
R422	1-208-910-11	s	RESISTOR,CHIP 9.1K (1005)
R423	1-220-883-81	s	RES, CHIP 36 (1005)
R424	1-218-965-11	s	RESISTOR, CHIP 10K 1/16W
R425	1-218-965-11	s	RESISTOR, CHIP 10K 1/16W
R426	1-220-883-81	s	RES, CHIP 36 (1005)
R427	1-208-687-11	s	RESISTOR CHIP 1.5K 1/16W (1005)
R550	1-216-841-11	s	RESISTOR, CHIP 47K 1/10W 1608
R551	1-216-841-11	s	RESISTOR, CHIP 47K 1/10W 1608
R552	1-216-841-11	s	RESISTOR, CHIP 47K 1/10W 1608
R553	1-216-841-11	s	RESISTOR, CHIP 47K 1/10W 1608
R554	1-216-841-11	s	RESISTOR, CHIP 47K 1/10W 1608
R555	1-216-841-11	s	RESISTOR, CHIP 47K 1/10W 1608
R556	1-216-841-11	s	RESISTOR, CHIP 47K 1/10W 1608
R557	1-216-841-11	s	RESISTOR, CHIP 47K 1/10W 1608
R558	1-216-841-11	s	RESISTOR, CHIP 47K 1/10W 1608
R559	1-216-841-11	s	RESISTOR, CHIP 47K 1/10W 1608
R560	1-216-841-11	s	RESISTOR, CHIP 47K 1/10W 1608
R561	1-216-841-11	s	RESISTOR, CHIP 47K 1/10W 1608
R562	1-216-841-11	s	RESISTOR, CHIP 47K 1/10W 1608
R563	1-216-841-11	s	RESISTOR, CHIP 47K 1/10W 1608
R601	1-216-821-11	s	RESISTOR,CHIP 1.0K 1/10W(1608)

6-4. Supplied Accessories

SUPPLIED ACCESSORIES

*1: [UP-D897(UC2)]

*2: [UP-D897(CED)]

Ref. No.

or Q'ty Part No. SP Description

1pc Δ *2 1-551-631-00 s POWER-SUPPLY CORD (IEC)

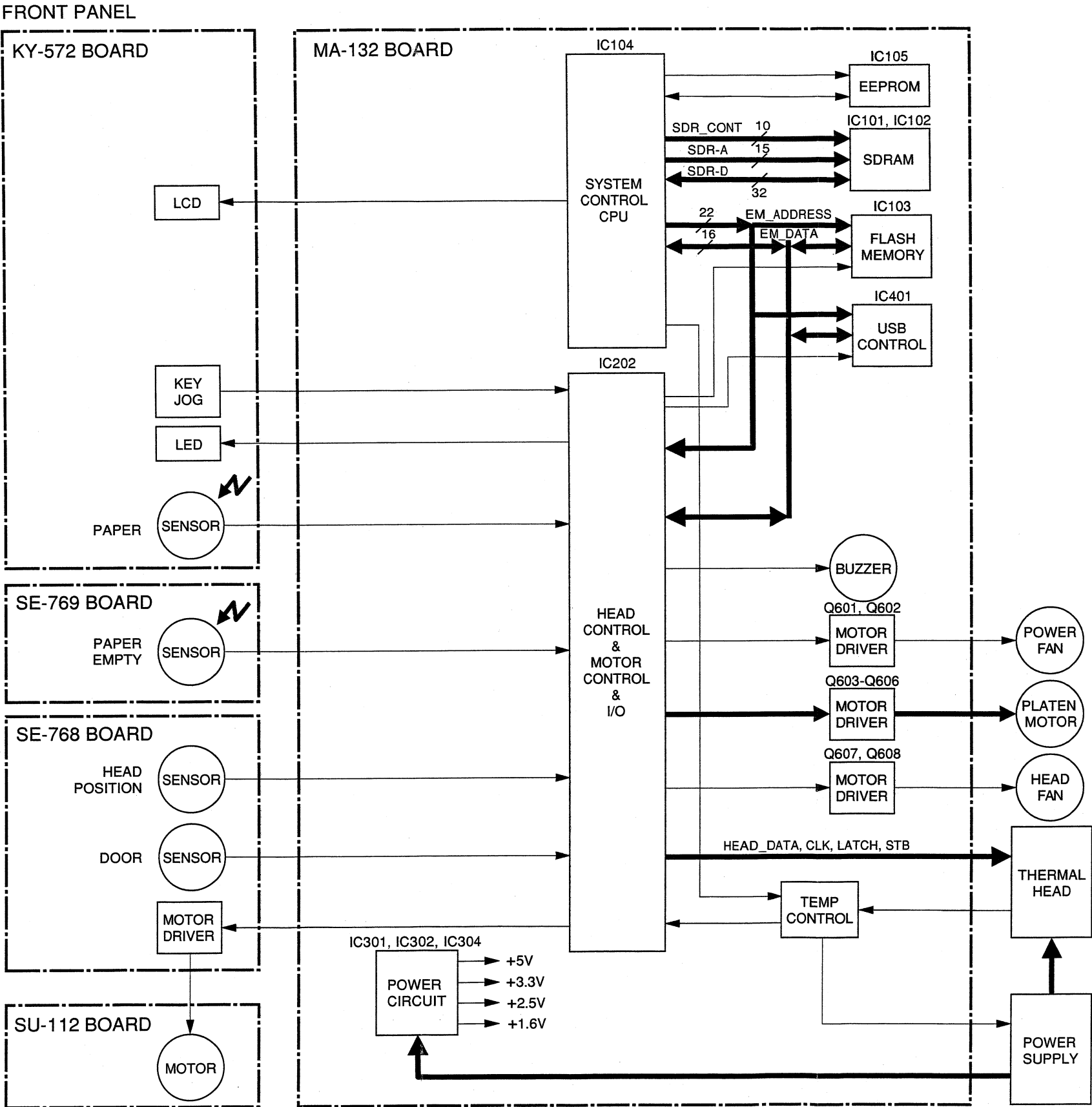
1pc Δ *1 1-556-813-22 s CORD, POWER

1pc 1-824-211-41 s CORD, CONNECTION

1pc 3-623-865-01 s SHEET, HEAD CLEANING (ACLYLIC)

1pc 3-863-306-03 s COMPACT DISC

Section 7
Block Diagram

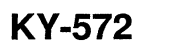


Section 8
Schematic Diagrams

Index

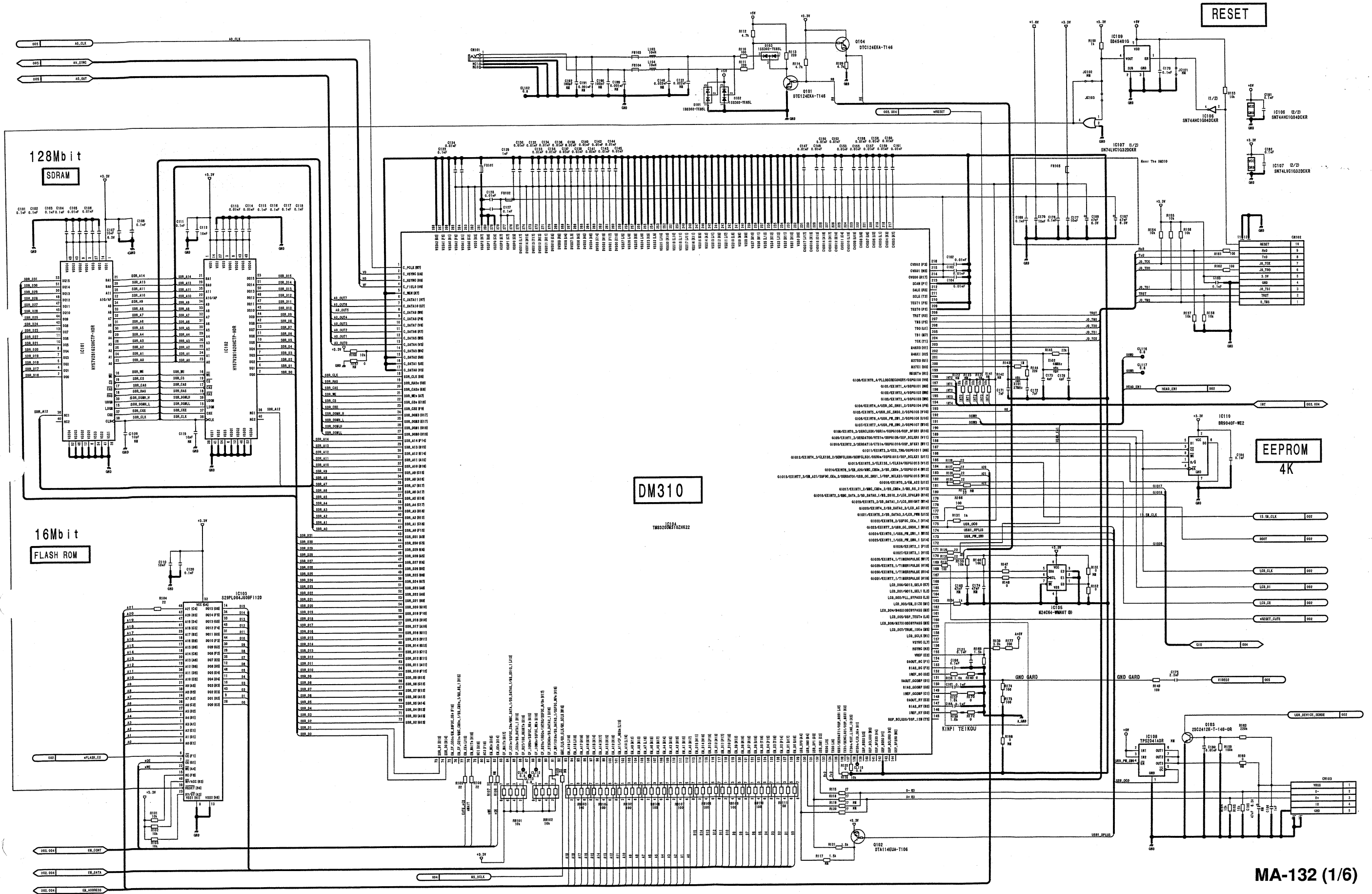
Board name	Page
KY-572	8-2
MA-132	8-3
SE-768	8-9
SE-769	8-9
SU-112	8-9
Frame Wiring	8-10

8-2



MA-132 (1/6)

MA-132 (1/6)



UP-D897

8-3

8-3

MA-132 (1/6)

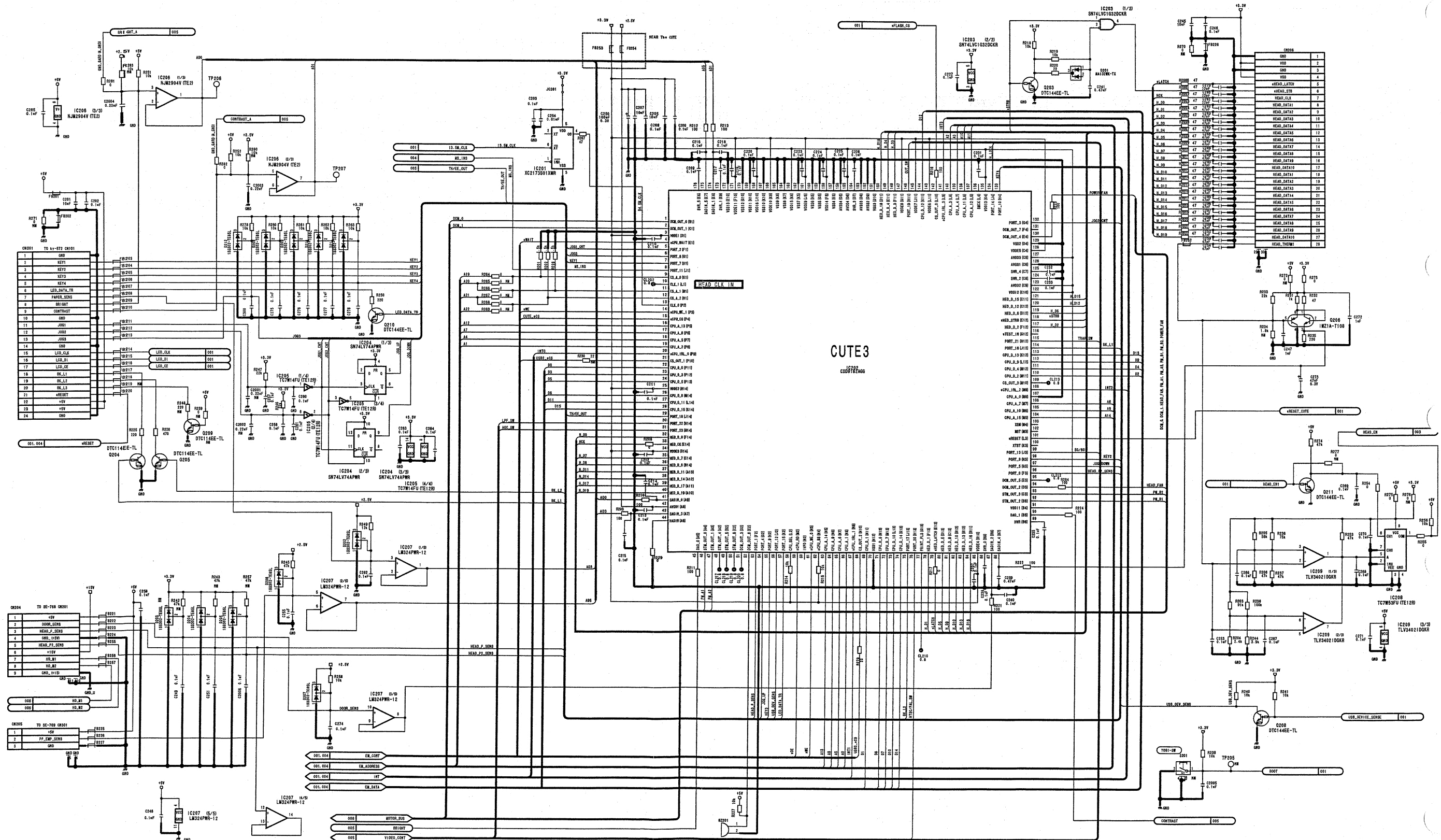
1

2

3

4

5



1



3

4

5

UP-D897

A

B

C

D

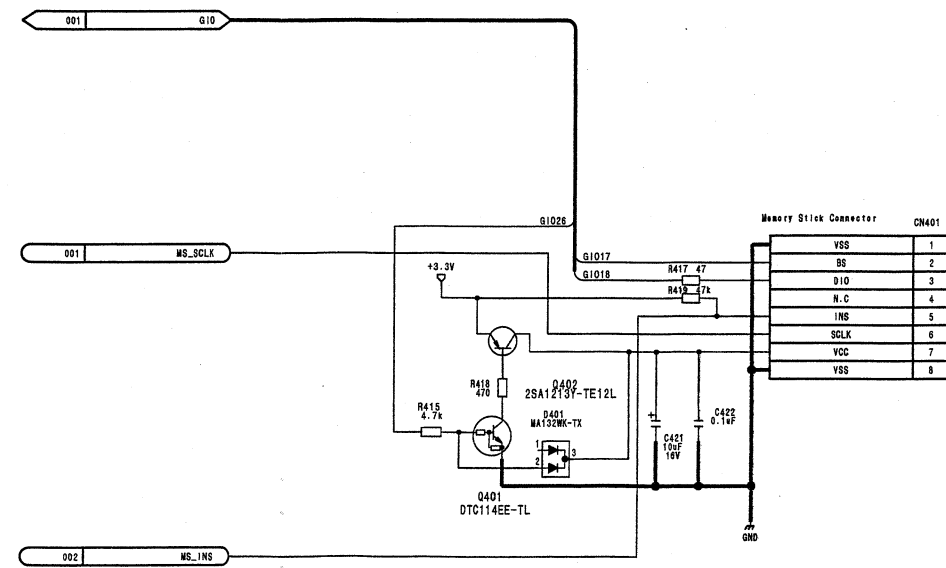
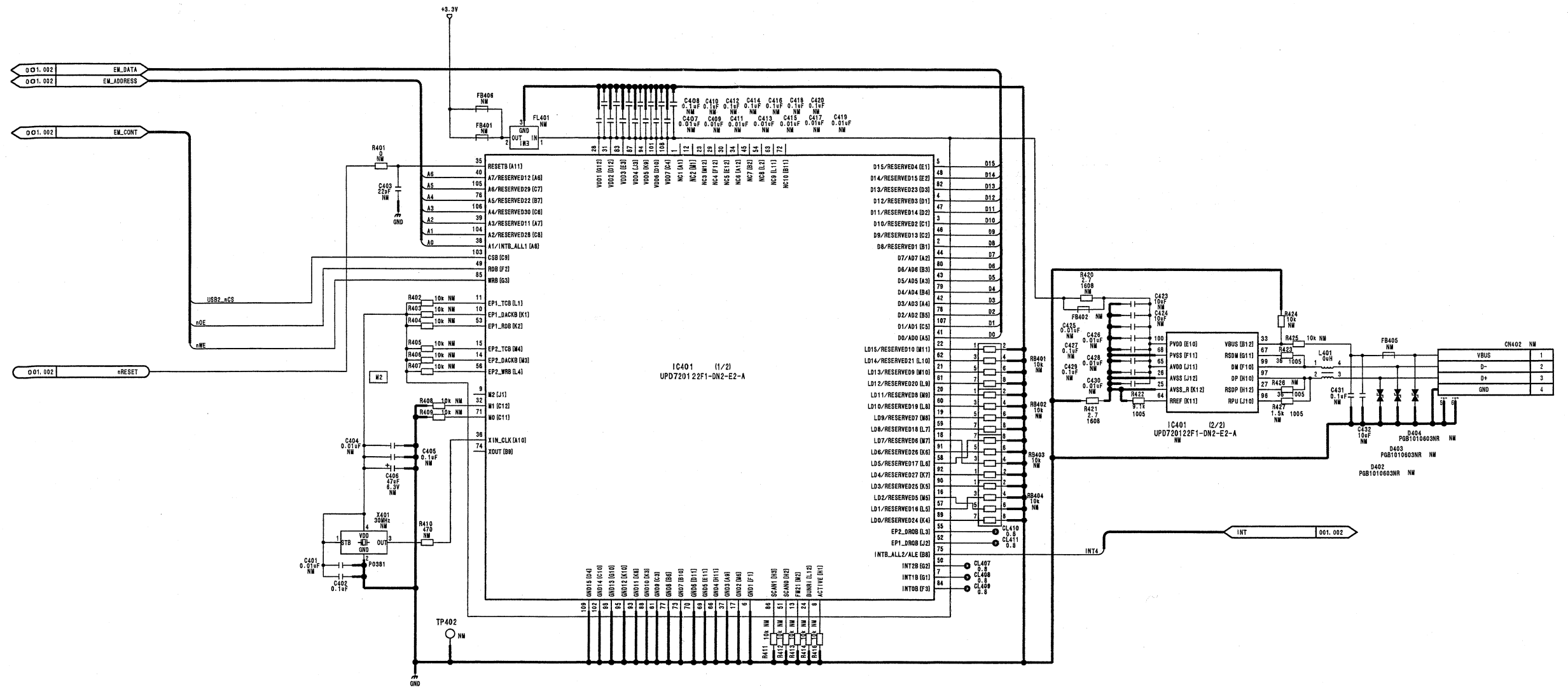
8-5

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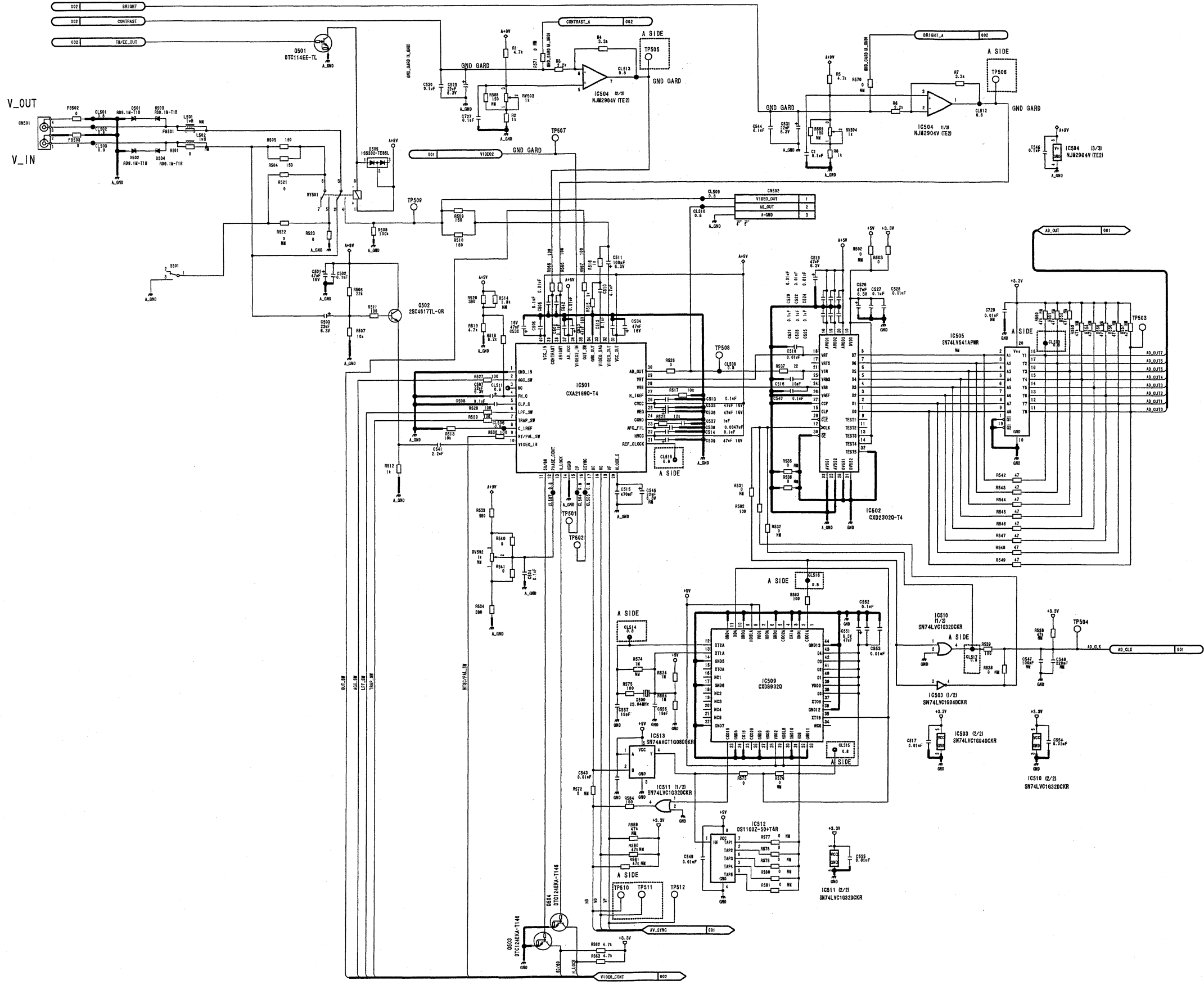
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G

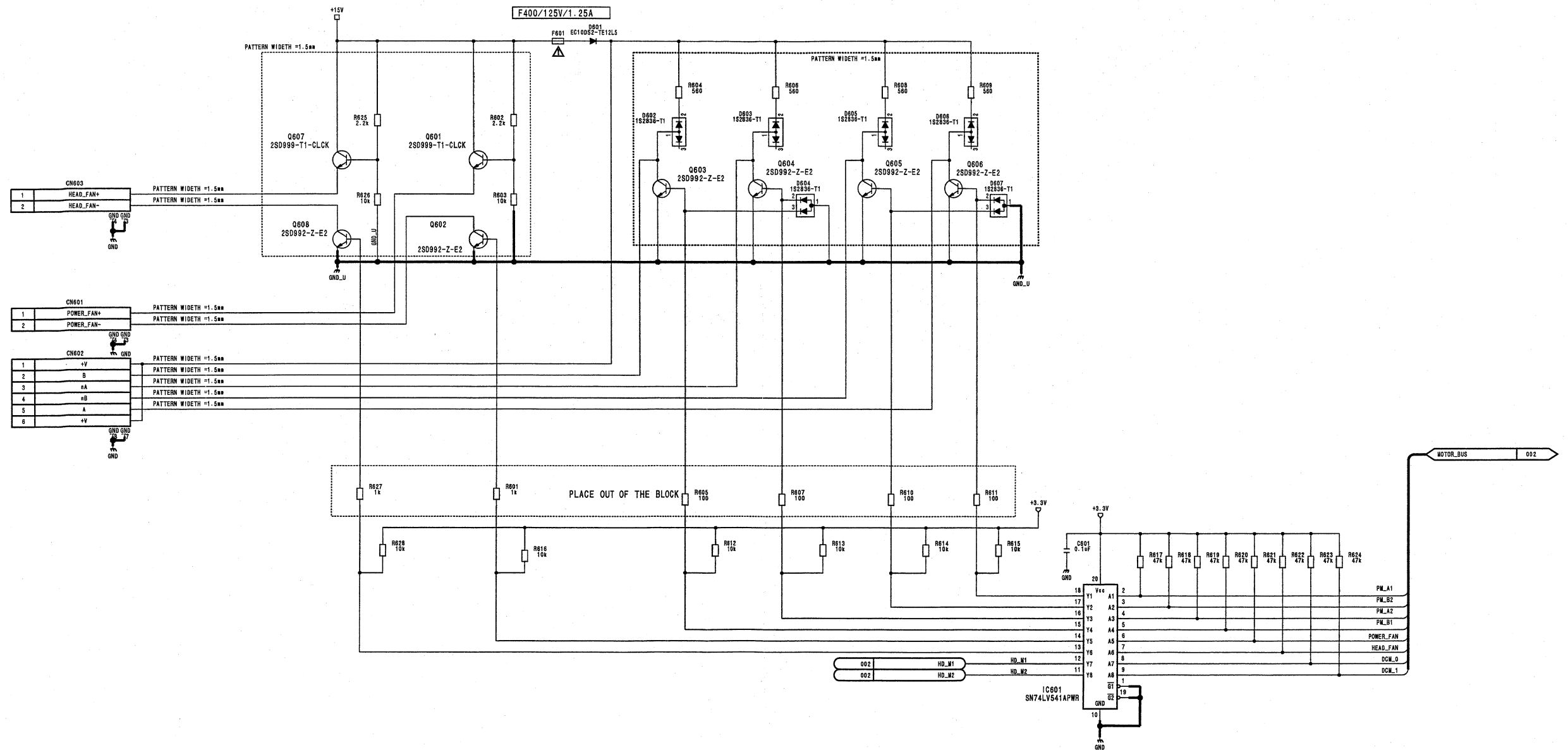
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MA-132 (5/6)

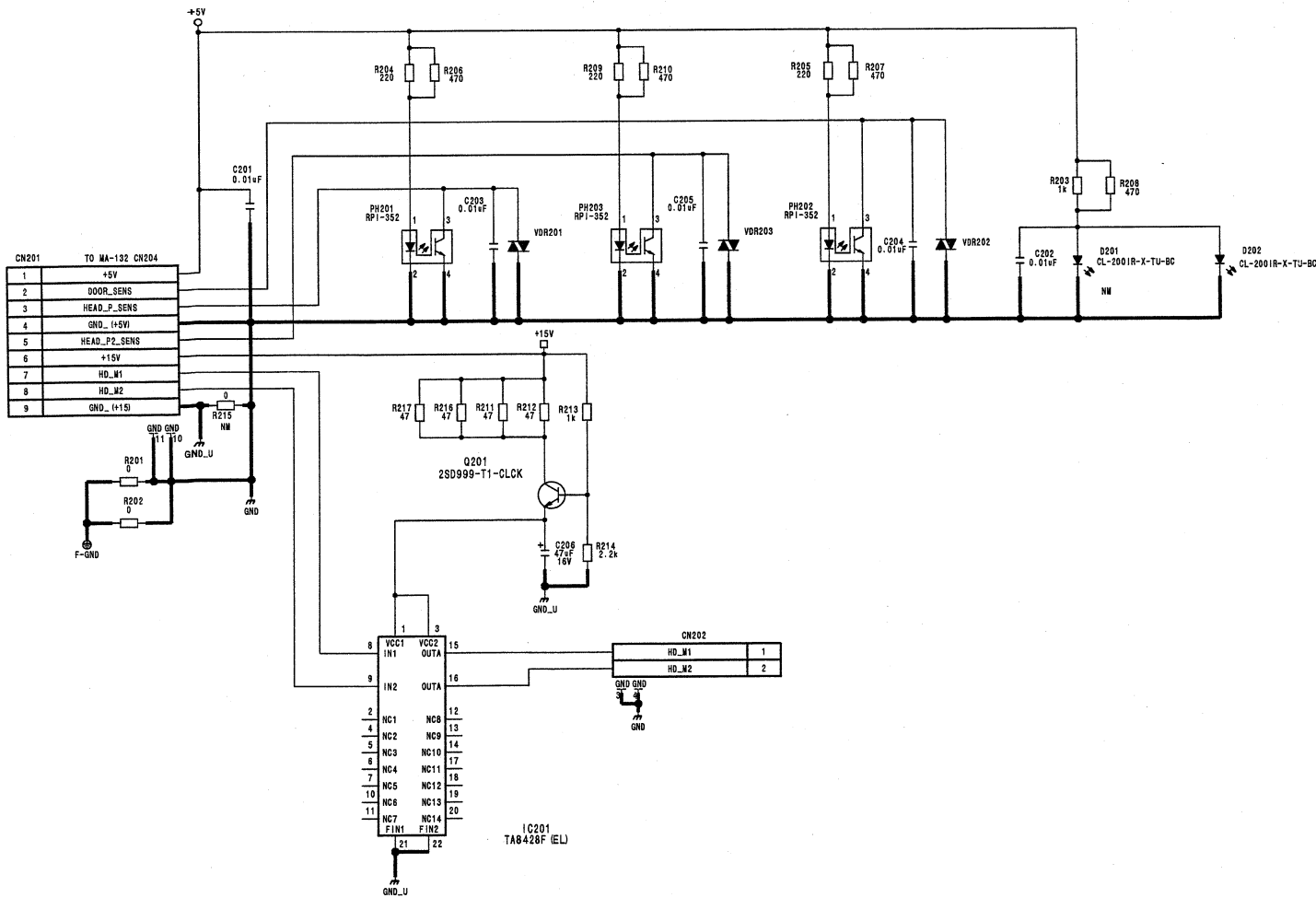


MA-132 (5/6)

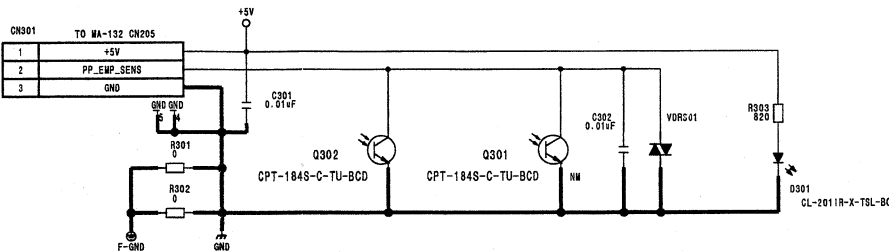


SE-768, SE-769, SU-112

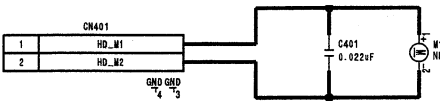
SE-768, SE-769, SU-112



SE-768



SE-769



SU-112

Frame Wiring Frame Wiring

1
2
3
4
5

A

B

C

8-10

D

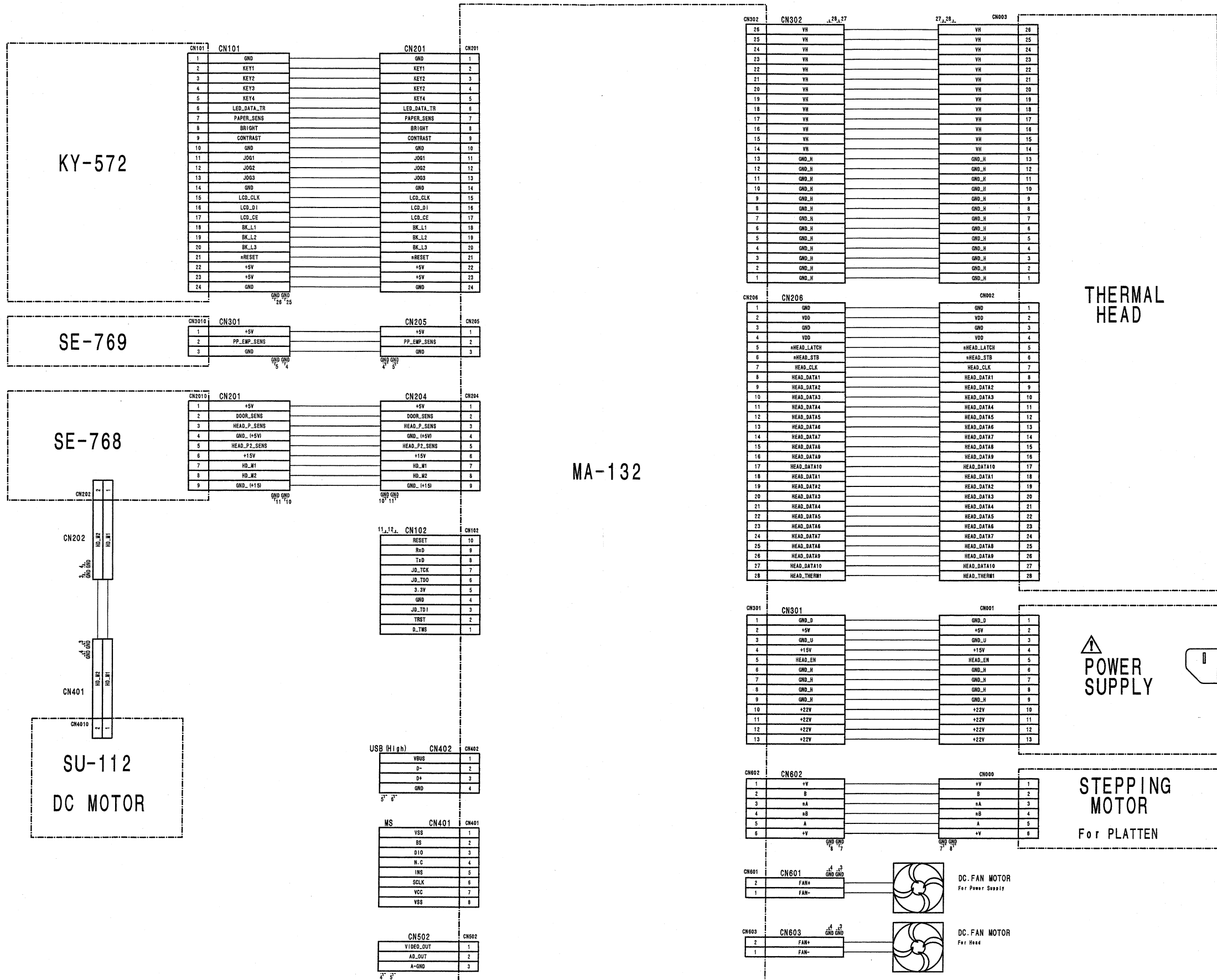
8-10

E

F

G

H

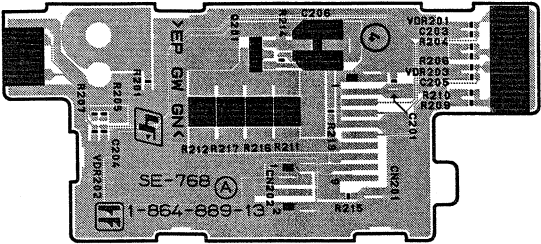


Frame Wiring

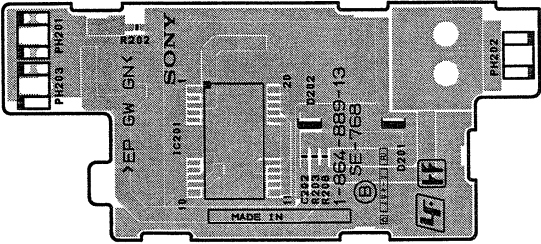
Section 9
Board Layouts

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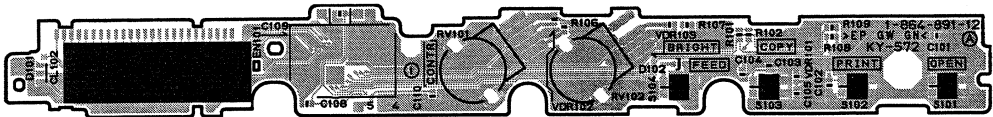
Board name	Page
KY-572	9-1
SE-768	9-1
SE-769	9-1
SU-112	9-1
MA-132	9-2



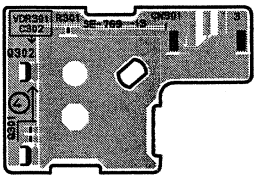
SE-768 -A SIDE-
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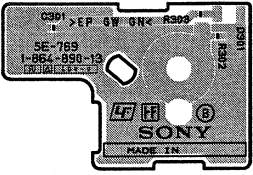
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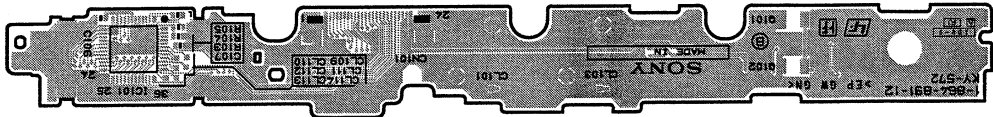
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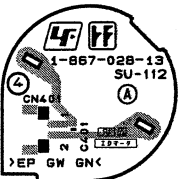
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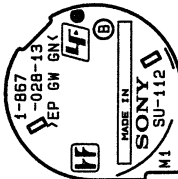
SE-769 -B SIDE-
SUFFIX: -13



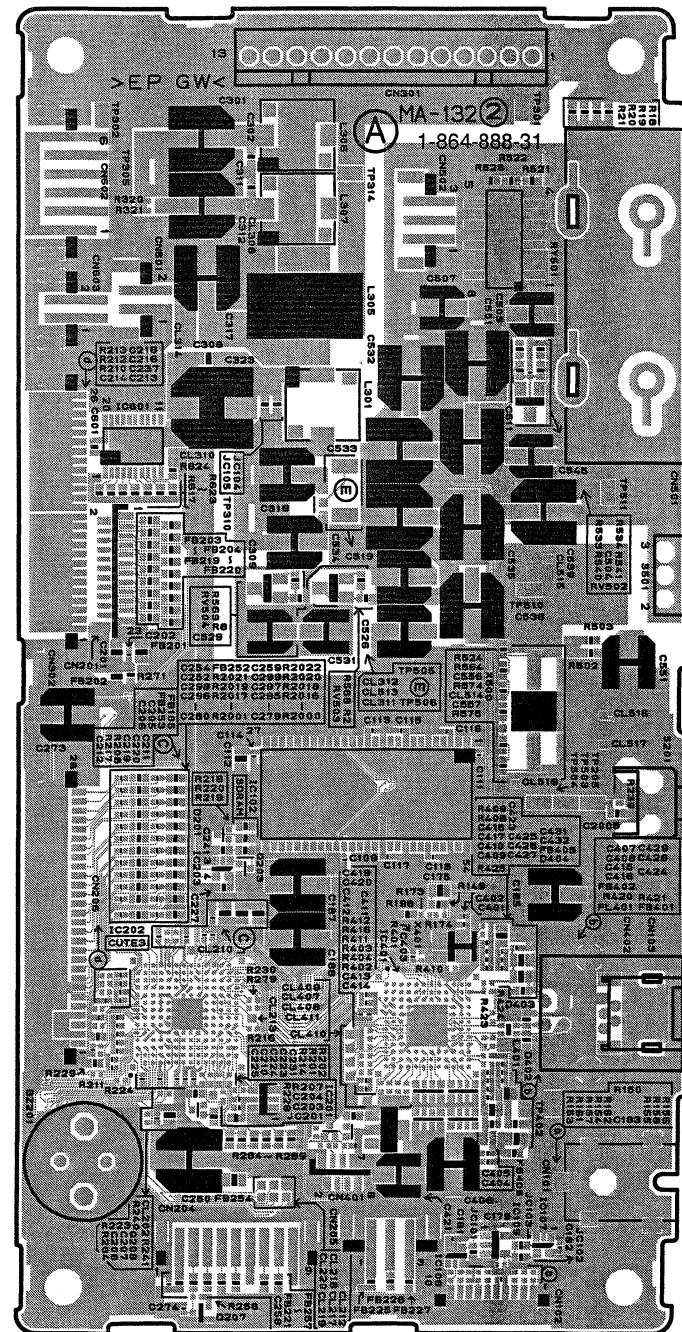
KY-572 -B SIDE-
SUFFIX: -12



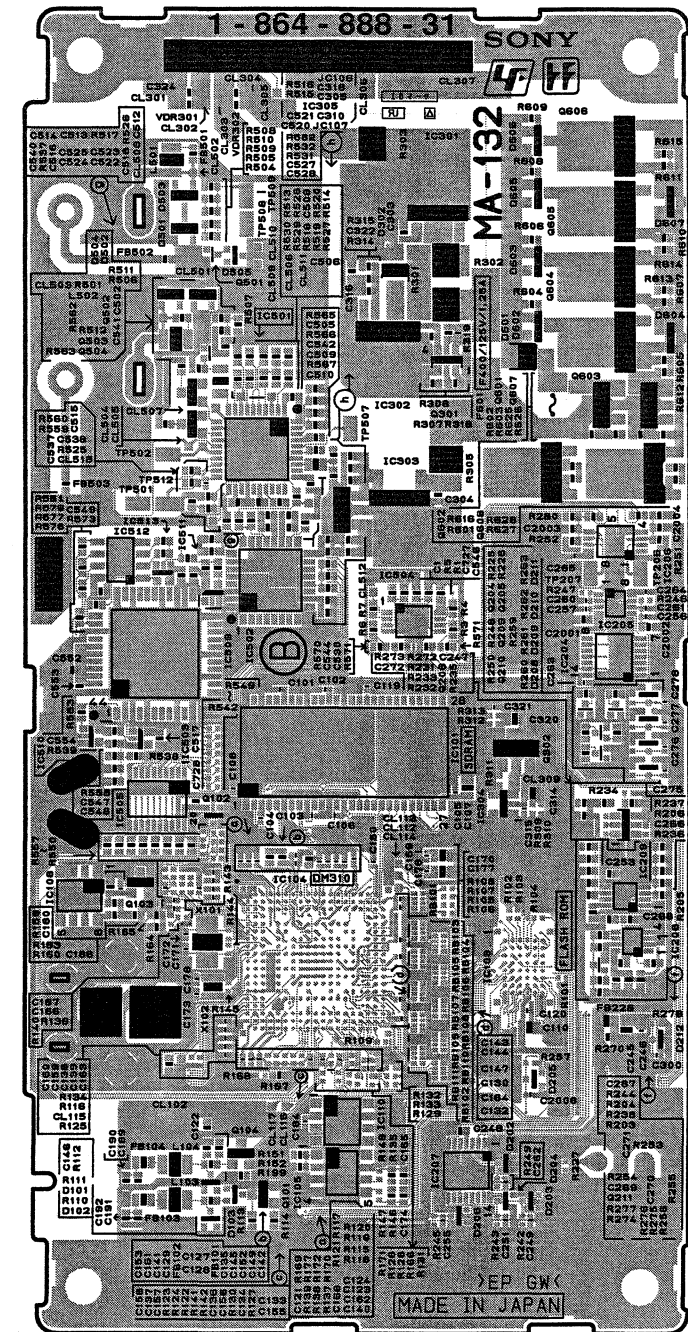
SU-112 -A SIDE-
SUFFIX: -13



SU-112 -B SIDE-
SUFFIX: -13



MA-132 -A SIDE-
SUFFIX: -31



MA-132 -B SIDE-
SUFFIX: -31

SAFETY CHECK-OUT

After correcting the original service problem, perform the following safety checks before releasing the set to the customer :

Check the metal trim, "metallized" knobs, screws, and all other exposed metal parts for AC leakage. Check leakage as described below.

LEAKAGE TEST

The AC leakage from any exposed metal part to earth ground and from all exposed metal parts to any exposed metal part having a return to chassis, must not exceed 0.5 mA. Leakage current can be measured by any one of three methods.

1. A commercial leakage tester, such as the Simpson 229 or RCA WT-540A. Follow the manufacturers' instructions to use these instruments.
2. A battery-operated AC milliammeter. The Data Precision 245 digital multimeter is suitable for this job.
3. Measuring the voltage drop across a resistor by means of a VOM or battery-operated AC voltmeter. The "limit" indication is 0.5 V, so analog meters must have an accurate low-voltage scale. The Simpson 250 and Sanwa SH-63Trd are examples of a passive VOM that is suitable. (See Fig. A)

